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TABLES  
OF THE  
FOUR GREAT SATELLITES  
OR  
JUPITER

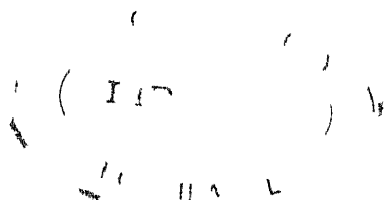


University of Durham Observatory

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TABLES  
OF THE  
FOUR GREAT SATELLITES  
OR  
JUPITER

BY  
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## P R E F A C E

THE *Tables of the Four Great Satellites of Jupiter* have been calculated from formulæ and precepts which I supplied by Mr F C H Carpenter B Sc Observer at Durham Observatory and Mr W F Doak M A Assistant at H M *Nautical Almanac Office* Mr Carpenter taking the major part The Tables were written in MS and verified for the most part by myself the verification was made wherever possible by reconstructing the entries of each Table from its difference columns The type was set up by Messrs Neill & Co Ltd with extreme accuracy and the proofs were read with the MS independently by Mr Carpenter and myself The cost of computation as far as this outran established duty at the Observatory was provided from the Government Grant for Scientific Investigations The cost of publication is borne by the Observatory

R A SAMPSON

UNIVERSITY OF DURHAM OBSERVATORY

1910 *August*



# CONTENTS

PREFACE		G 111
INTRODUCTION		vii
SATELLITE I	Approximate Tables of Conjunction I–VIII	1
	Tables of Longitude Latitude and Radius Vector IX–XXXVII	11
	Tables of the Phenomena XXXVIII–LIV	53
SATELLITE II	Approximate Tables of Conjunction I–VIII	63
	Tables of Longitude Latitude and Radius Vector IX–XLVII	75
	Tables of the Phenomena XLVIII–LXIX	121
SATELLITE III	Approximate Tables of Conjunction I–X	137
	Tables of Longitude Latitude and Radius Vector XI–XLV	149
	Tables of the Phenomena XLVI–LXVIII	191
SATELLITE IV	Approximate Tables of Conjunction I–VIII	211
	Tables of Longitude Latitude and Radius Vector IX–XXXIX	223
	Tables of the Phenomena XL–LXIV	265
AUXILIARY TABLES	C–CIX	293





# INTRODUCTION



# Tables of the Four Great Satellites of Jupiter

## ERRATA

AN erroneous formula has been used for the phenomena of Shadows and Transits (*Mon Not Roy Ast Soc* 1910 Dec) The following directions will correct it The formulæ for Eclipses and Occultations are already correct and are not altered in any respect

*Introduction* p xix for the expressions for the *Reductions to Middle* read

### SATELLITE I

No	Argument	Notation of Tables	Eclipse Shadow	Occultation	Transit
1	$\sin 2h$	K	$\overset{d}{-} 0000399$	$\overset{d}{ib}$	$\overset{d}{ib}$
2	$\sin (h+h)$	P	$- 000007$	$ib$	$ib$
3	$\sin (h+h)$	Q	$- 000003$	$ib$	$ib$
4	$\sin 2d$	A	$+ 000035$	$ib$	$ib$
5	$\sin H \cos h$	$\gamma K$		$- 000065$	$+ 000065$

### SATELLITE II

No	Argument	Notation of Tables	Eclipse Shadow	Occultation	Transit
1	$\sin 2h$	Q	$\overset{d}{-} 0000810$	$\overset{d}{ib}$	$\overset{d}{ib}$
2	$\sin (h+h)$	R	$- 000264$	$ib$	$ib$
3	$\sin (h+h)$	S	$- 000016$	$ib$	$ib$
4	$\sin (h+h_4)$	T	$- 000004$	$ib$	$ib$
5	$\sin 2h$	U	$- 000021$	$ib$	$ib$
6	$\sin (\Psi-\omega)$	P	$+ 000019$	$ib$	$ib$
7	$\sin 2d_3$	A	$+ 000061$	$ib$	$ib$
8	$\sin H \cos h$	$\gamma Q$		$- 000133$	$+ 000133$

### SATELLITE III

No	Argument	Notation of Tables	Eclipse Shadow	Occultation	Transit
1	$\sin 2h$	O	$\overset{d}{-} 0001567$	$\overset{d}{ib}$	$\overset{d}{ib}$
2	$\sin (h+h)$	P	$+ 000019$	$ib$	$ib$
3	$\sin (h+h)$	Q	$- 000199$	$ib$	$ib$
4	$\sin (h+h)$	R	$- 000039$	$ib$	$ib$
5	$\sin 2h_3$	S	$- 000008$	$ib$	$ib$
6	$\sin (\Psi-\omega)$	N	$+ 000016$	$ib$	$ib$
7	$\sin (\Psi-\omega_4)$		$+ 000003$	$ib$	$ib$
8	$\sin g$	D	$+ 000008$	$ib$	$ib$
9	$\sin H \cos h$	$\gamma O$		$- 000264$	$+ 000264$

# Tables of the Four Great Satellites of Jupiter

## SATELLITE IV

No.	Argument	Notation of Tables	Eclipse, Shadow	Occultation	Transit
1	$\sin 2h_0'''$	J	<sup>a</sup> — 0'002834	<sup>a</sup> <i>ib.</i>	<sup>a</sup> <i>ib.</i>
2	$\sin (h_0''' + h_3''')$	L	+ 0'000068	<i>ib.</i>	<i>ib.</i>
3	$\sin (h_0''' + h_4''')$	K	— 0'000627	<i>ib.</i>	<i>ib.</i>
4	$\sin 2h_4'''$	M	— 0'000035	<i>ib.</i>	<i>ib.</i>
5	$\sin (\Psi - \omega_4)$	I	+ 0'000050	<i>ib.</i>	<i>ib.</i>
6	$\sin (\Psi - \omega_3)$	..	— 0'000006	<i>ib.</i>	<i>ib.</i>
7	$\sin g_4'''$	E	+ 0'000028	<i>ib.</i>	<i>ib.</i>
8	$\sin H_1 \cos h_0'''$	$\gamma, J$	..	— 0'000537	+ 0'000537

P. xxi. In the expressions for *Semiduration*, delete the terms :—

Satellite I, (8);

Satellite III, (9);

Satellite II, (9);

Satellite IV, (9), (15).

In the *Tables of the Semiduration*,

Satellite I : Table XLI, cancel column 3 and employ column 1 for all phenomena ;

Satellite II : cancel Table LV and employ Table LIV for all phenomena ;

Satellite III : cancel Table LV and employ Table LIV for all phenomena ;

Satellite IV : cancel Tables XLIV, XLVIII and employ Tables XLIII, XLVII  
respectively for all phenomena.

In the *Tables of the Reduction to Middle*, cancel the Tables printed and employ those given below. These require no additional explanation except to point out that the constant portion of the Equation of Light (*Introduction*, p. xxiv) is now applied to one of the minor Tables in place of to the leading Table for each Satellite.

The following errata may also be noted :

*Introduction*, p. xv : delete ° under *Coefficient of Cosine*.

p. 178, Table XXV, with argument **165**, for 1363 read 1263.

p. 208, column 5, for 0'0000 read 0'0000 and so throughout the column.

# SATELLITE I

## Tables of the Phenomena

XLV

Reduction to Middle

Argument K

			3				3				3				3
K	Ecl Sh	Oc T	Δ	K	Ecl Sh	Oc Tr	Δ	K	Ecl Sh	Oc T	Δ	K	Ecl Sh	Oc Tr	Δ
0 00	d - 00	070	- 29	0 50	d + 0000	89	+ 6	1 00	d - 0003	62	- 19	1 50	d + 0003	07	+ 10
01		98	8	51		115	6	01		381	18	51		316	8
02		1 7	29	52		14	4	02		398	17	52		3 2	6
03		155	8	53		163	23	03		414	15	53		3 6	4
04		18	7	54		186	2	04		428	13	54		329	+ 2
05		209	7	55		07	1	05		438	11	55		329	0
0 06	- 0002	35	- 26	0 56	+ 000	7	+ 19	1 06	- 0004	48	- 10	1 56	+ 0003	28	- 2
07		60	5	57		245	18	07		457	8	57		3 6	5
08		85	25	58		26	16	08		463	6	58		320	7
09		309	23	59		76	14	09		467	3	59		31	9
10		331	1	60		289	13	10		469	- 2	60		303	10
0 11	- 0003	51	- 2	0 61	+ 0003	01	+ 11	1 11	- 0004	69	0	1 61	+ 0002	29	- 12
12		371	19	62		311	9	12		467	+ 3	62		279	14
13		389	17	63		319	7	13		464	5	63		64	16
14		405	16	64		3 4	4	14		458	7	64		247	18
15		4 0	14	65		327	3	15		451	9	65		9	19
0 16	- 0004	33	- 12	0 66	+ 0032	9	+ 1	1 16	- 0004	44	+ 11	1 66	+ 0002	10	- 1
17		443	10	67		3 9	- 1	17		4 8	13	67		189	2
18		45	9	68		3 7	3	18		416	14	68		167	3
19		460	7	69		3 3	6	19		401	16	69		143	5
20		465	4	70		316	8	20		384	18	70		119	26
0 21	- 0004	68	- 2	0 71	+ 0003	08	- 9	1 21	- 0003	65	+ 20	1 71	+ 0 00	93	- 7
22		469	- 1	72		98	11	22		346	21	72		66	27
23		468	+ 1	73		286	13	23		325		73		40	28
24		466	4	74		7	15	24		3 1	24	74		1	28
25		461	6	75		256	17	25		277	25	75		16	28
0 26	- 0004	54	+ 8	0 76	+ 0002	39	- 18	1 26	- 000	53	+ 26	1 76	- 0000	44	- 28
27		446	10	77		220	0	27		27	27	77		7	29
28		435	1	78		00	21	28		00	7	78		101	29
29		4 3	13	79		178		29		174	28	79		129	9
30		409	15	80		156	24	30		146	28	80		156	8
0 31	- 0003	93	+ 17	0 81	+ 0001	13	- 5	1 31	- 0001	18	+ 29	1 81	- 0001	84	- 8
32		375	19	82		107	26	32		89	29	82		21	7
33		356	20	83		81	27	33		61	29	83		38	26
34		336	21	84		54	7	34		33	8	84		263	5
35		314	23	85		27	28	35		5	28	85		287	24
0 36	- 000	90	+ 24	0 86	- 00	001	- 8	1 36	+ 0000	3	+ 28	1 86	- 0003	10	3
37		266	25	87		29	28	37		51	8	87		33	2
38		241	26	88		57	28	38		77	27	88		353	20
39		215	27	89		85	29	39		1 3	26	89		37	19
40		188	7	90		114	29	40		129	25	90		390	17
0 41	- 0 01	61	+ 28	0 91	- 0001	42	- 28	1 41	+ 0001	52	+ 24	1 91	- 0004	06	- 16
42		133	28	92		169	27	42		176	23	92		4 1	14
43		105	29	93		197	28	43		197	2	93		434	12
44		76	9	94		24	26	44		18	20	94		444	10
45		48	28	95		249	25	45		37	19	95		453	9
0 46	- 0000	0	+ 28	0 96	- 000	74	- 5	1 46	+ 0002	55	+ 17	1 96	- 0004	61	- 7
47		8	8	97		298	23	47		70	15	97		465	4
48		36	28	98		320	2	48		283	14	98		468	2
49		63	7	99		342	1	49		296	12	99		469	- 1
0 50		89	+ 6	1 00	-	362	- 19	1 50		307	+ 10	2 00	- 0004	68	+ 2

Appl d C t t 0000 Th E t y m t b p p l m t d b y t h D q t l f t b l XLV L Tl h l m t b t d b y d d i g t  
 it l f i t p d t b y t h V l t d w f m T b l XXV XXIX T S l d w d T l t i t m t l b t d f J p l t P l b y T b l L I

# SATELLITE I

## Tables of the Phenomena

XLVI

Equations of the Reduction

Occ., Tr.

$\gamma$ \ $K$	$0^d.0$ $0^d.1$ $0^d.2$			$0^d.3$ $0^d.4$ $0^d.5$			$0^d.6$ $0^d.7$ $0^d.8$			$0^d.9$ $1^d.0$ $1^d.1$			$1^d.2$ $1^d.3$ $1^d.4$			$1^d.5$ $1^d.6$ $1^d.7$			$1^d.8$ $1^d.9$ $2^d.0$		
$d$																					
0	$\pm 3$	$\pm 3$	$\pm 2$	$\pm 1$	0	$\mp 1$	$\mp 2$	$\mp 2$	$\mp 3$	$\mp 3$	$\mp 3$	$\mp 2$	$\mp 1$	0	$\pm 1$	$\pm 2$	$\pm 2$	$\pm 3$	$\pm 3$	$\pm 3$	$\pm 2$
20	$\pm 25$	23	19	12	$\pm 4$	$\mp 5$	13	19	23	25	23	18	11	$\mp 2$	$\pm 6$	14	20	24	24	22	$\pm 17$
40	$\pm 43$	41	33	21	$\pm 7$	$\mp 9$	23	34	41	43	40	31	19	$\mp 4$	$\pm 11$	25	36	42	43	39	$\pm 30$
60	$\pm 57$	54	43	28	$\pm 9$	$\mp 12$	30	45	55	57	52	41	25	$\mp 5$	$\pm 15$	33	47	56	57	51	$\pm 39$
80	$\pm 64$	60	49	31	$\pm 10$	$\mp 13$	34	51	61	64	59	46	28	$\mp 6$	$\pm 17$	37	53	62	64	57	$\pm 44$
100	$\pm 64$	60	48	31	$\pm 10$	$\mp 13$	34	51	61	63	58	46	28	$\mp 6$	$\pm 16$	37	53	62	63	57	$\pm 43$
120	$\pm 56$	52	42	27	$\pm 8$	$\mp 11$	30	44	53	56	51	40	24	$\mp 5$	$\pm 14$	32	46	54	55	50	$\pm 38$
140	$\pm 41$	39	31	20	$\pm 6$	$\mp 8$	22	33	39	41	38	30	18	$\mp 4$	$\pm 11$	24	34	40	41	37	$\pm 28$
160	$\pm 22$	$\pm 21$	$\pm 17$	$\pm 11$	$\pm 3$	$\mp 4$	$\mp 12$	$\mp 17$	$\mp 21$	$\mp 22$	$\mp 20$	$\mp 16$	$\mp 10$	$\mp 2$	$\pm 6$	$\pm 13$	$\pm 18$	$\pm 21$	$\pm 22$	$\pm 20$	$\pm 15$
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	$\mp 22$	$\mp 20$	$\mp 16$	$\mp 11$	$\mp 3$	$\pm 4$	$\pm 12$	$\pm 17$	$\pm 21$	$\pm 22$	$\pm 20$	$\pm 16$	$\pm 9$	$\pm 2$	$\mp 6$	$\mp 12$	$\mp 18$	$\mp 21$	$\mp 22$	$\mp 19$	$\mp 15$
220	$\mp 41$	39	31	20	$\mp 6$	$\pm 8$	22	33	39	41	38	30	18	$\pm 4$	$\mp 11$	24	34	40	41	37	$\mp 28$
240	$\mp 56$	52	42	27	$\mp 8$	$\pm 11$	30	44	53	56	51	40	24	$\pm 5$	$\mp 14$	32	46	54	55	50	$\mp 38$
260	$\mp 64$	60	48	31	$\mp 10$	$\pm 13$	34	51	61	64	58	46	28	$\pm 6$	$\mp 16$	37	53	62	63	57	$\mp 43$
280	$\mp 64$	60	49	31	$\mp 10$	$\pm 13$	34	51	61	64	59	46	28	$\pm 6$	$\mp 17$	37	54	63	65	58	$\mp 44$
300	$\mp 57$	54	43	28	$\mp 9$	$\pm 12$	30	45	55	57	53	41	25	$\pm 5$	$\mp 15$	33	47	56	57	51	$\mp 39$
320	$\mp 44$	41	33	21	$\mp 7$	$\pm 9$	23	35	42	43	40	31	19	$\pm 4$	$\mp 11$	25	36	42	43	39	$\mp 30$
340	$\mp 25$	23	19	12	$\mp 4$	$\pm 5$	13	20	24	25	23	18	11	$\pm 2$	$\mp 6$	14	20	24	25	22	$\mp 17$
360	$\mp 3$	$\mp 3$	$\mp 2$	$\mp 1$	0	$\pm 1$	$\pm 2$	$\pm 2$	$\pm 3$	$\pm 3$	$\pm 3$	$\pm 2$	$\pm 1$	0	$\mp 1$	$\mp 2$	$\mp 3$	$\mp 3$	$\mp 3$	$\mp 3$	$\mp 2$
380	$\pm 19$	$\pm 18$	$\pm 14$	$\pm 9$	$\pm 3$	$\mp 4$	$\mp 10$	$\mp 15$	$\mp 18$	$\mp 19$	$\mp 17$	$\mp 14$	$\mp 8$	$\mp 2$	$\pm 5$	$\pm 11$	$\pm 16$	$\pm 18$	$\pm 19$	$\pm 17$	$\pm 13$
400	$\pm 39$	$\pm 36$	$\pm 29$	$\pm 19$	$\pm 6$	$\mp 8$	$\mp 21$	$\mp 31$	$\mp 37$	$\mp 39$	$\mp 36$	$\mp 28$	$\mp 17$	$\mp 4$	$\pm 10$	$\pm 22$	$\pm 32$	$\pm 38$	$\pm 39$	$\pm 35$	$\pm 26$

The unit in this Table is  $0^d.000001$ .

No Constant has been added.

The upper sign applies for Occultations, the lower for Transits.

XLVIII

1	2	1	2
A	Ecl., Oc. Sh., Tr.	A	Ecl., Oc. Sh., Tr.
d	d	d	d
0 <sup>0</sup>	+ '000035	2 <sup>0</sup>	+ '000060
.1	46	.1	66
.2	57	.2	68
.3	64	.3	66
.4	68	.4	60
.5	67	.5	51
0 <sup>6</sup>	+ '000063	2 <sup>6</sup>	+ '000040
.7	55	.7	28
.8	44	.8	17
.9	32	.9	8
1 <sup>0</sup>	21	3 <sup>0</sup>	3
1 <sup>1</sup>	+ '000011	3 <sup>1</sup>	+ '000001
.2	4	.2	4
.3	1	.3	10
.4	3	.4	20
.5	8	.5	31
1 <sup>6</sup>	+ '000016	3 <sup>6</sup>	+ '000043
.7	27	.7	54
.8	39	.8	63
.9	50	.9	67
2 <sup>0</sup>	+ '000060	4 <sup>0</sup>	+ '000068

Added Constant:  $+0^d.000035$ .

XLIX

1	2
P	Ecl., Oc. Sh., Tr.
d	d
0 <sup>00</sup>	+ '000010
.05	8
.10	5
.15	4
.20	3
.25	3
0 <sup>30</sup>	+ '000004
.35	6
.40	8
.45	10
.50	13
0 <sup>55</sup>	+ '000015
.60	17
.65	18
.70	17
.75	16
0 <sup>80</sup>	+ '000014
.85	12
.90	9
.95	7
1 <sup>00</sup>	+ '000004

Added Constant:  $+0^d.000010$ .

d

L

1	2	3
Ecl., Oc.	Q	Sh., Tr.
d	d	d
+ '000041	0 <sup>0</sup>	+ '000009
39	.1	7
38	.2	6
38	.3	6
40	.4	8
42	.5	10
+ '000044	0 <sup>6</sup>	+ '000012
44	.7	12
43	.8	11
41	.9	9
+ '000039	1 <sup>0</sup>	+ '000007

Added Constant:  $+0^d.000025$ .  
A term of Equation of Light is included.

# SATELLITE II

## Tables of the Phenomena

LVII

Reduction to Middle

Argument Q

Q	Ecl Sh	Oc Tr	3 Δ o <sup>d</sup> or	Q	Ecl Sh	Oc T	3 Δ o <sup>d</sup> or	Q	Ecl Sh	Oc Tr	3 Δ o <sup>d</sup> or	Q	Ecl Sh	O Tr	3 Δ o <sup>d</sup> or
d	d							d							
0 00	- 0 0005	0	- 29	1 00	- 000187		+ 26	2 00	- 0 001077		- 0	3 00	+ 0 00025		+ 11
02		557	28	02		135	26	02		1117	18	02		7	9
04		614	29	04		84	5	04		1152	17	04		87	7
06		671	28	06	-	36	24	06		1184	15	06		99	5
08		7 6	27	08	+	9	2	08		1 13	13	08		305	2
10		780	27	10		5	21	10		1 38	1	10		308	+ 1
0 12	- 0 000834		- 26	1 12	+ 0 000093		+ 0	2 12	- 0 001 61		- 1	3 12	+ 0 000309		- 1
14		885	25	14		131	18	14		1 79	8	14		304	3
16		934	4	16		165	16	16		1293	6	16		296	5
18		981	3	18		196	15	18		130	4	18		284	7
20		10 6	2	20		223	13	20		1308	- 2	20		267	10
0 22	- 0 001069		- 21	1 22	+ 0 000 47		+ 11	2 22	- 0 00131		0	3 22	+ 0 000246		- 1
24		1109	19	24		268	9	24		1308	+ 2	24		21	13
26		1145	17	26		284	7	26		1301	4	26		194	15
28		1177	16	28		97	5	28		1 91	6	28		163	16
30		1207	14	30		304	3	30		1 77	8	30		1 9	18
0 32	- 0 001233		- 12	1 32	+ 0 000308		+ 1	2 32	- 0 001260		+ 10	3 32	+ 0 000092		- 20
34		1 56	11	34		309	- 1	34		1237	1	34		51	21
36		1275	9	36		305	3	36		1211	14	36	+	7	23
38		1290	6	38		98	5	38		1182	15	38	-	40	4
40		1300	4	40		287	7	40		1150	17	40		88	25
0 42	- 0 001307		- 2	1 42	+ 0 000271		- 9	2 42	- 0 001114		+ 19	3 42	- 0 000138		- 5
44		1310	- 1	44		251	11	44		1075	20	44		189	26
46		1309	+ 2	46		7	13	46		1034	1	46		43	27
48		1303	4	48		200	14	48		989	3	48		297	28
50		1294	6	50		170	16	50		94	24	50		354	28
0 52	- 0 001281		+ 8	1 52	+ 0 000137		- 18	2 52	- 0 000894		+ 25	3 52	- 0 00041		- 29
54		1 64	10	54		100	19	54		843	26	54		468	28
56		1 42	12	56		60	1	56		789	7	56		5 5	8
58		1 17	13	58	+	17	2	58		735	7	58		581	28
60		1189	15	60	-	9	24	60		680	8	60		639	9
0 62	- 0 001157		+ 16	1 62	0 000077		- 25	2 62	- 0 0006 4		+ 28	3 62	- 0 000695		- 8
64		11 2	18	64		127	25	64		568	28	64		751	7
66		1084	20	66		178	6	66		510	29	66		8 4	26
68		1043	1	68		31	27	68		452	29	68		856	6
70		999	23	70		85	28	70		396	28	70		907	25
0 72	- 0 000953		+ 24	1 72	- 0 00034		- 28	2 72	- 0 000339		+ 28	3 72	- 0 000956		4
74		905	25	74		399	9	74		84	28	74		100	
76		854	26	76		456	28	76		8	7	76		1045	21
78		801	27	78		513	8	78		176	26	78		1087	20
80		747	27	80		569	8	80		124	26	80		1126	18
0 82	- 0 000692		+ 28	1 82	- 0 000626		- 29	2 82	- 0 000073		+ 25	3 82	- 0 001160		- 16
84		636	28	84		683	8	84	-	25	23	84		1191	15
86		580	8	86		739	27	86	+	19	22	86		1219	13
88		523	29	88		79	7	88		61	1	88		1244	12
90		465	29	90		845	26	90		10	19	90		1266	10
0 92	- 0 00 408		+ 28	1 92	- 0 000896		- 25	2 92	+ 0 000139		+ 17	3 92	- 0 001 83		- 7
94		351	28	94		945	24	94		172	16	94		1295	5
96		96	28	96		992	23	96		03	14	96		1304	3
98		240	27	98		1036	21	98		29	12	98		1309	- 2
1 00	- 0 000187		+ 26	2 00	- 0 001077		- 20	3 00	+ 0 000 52		+ 11	4 00	- 0 001311		0

Appl d Co t t 000500 Th E t y m t b p p l m t d b y Eq t l f m T b l LVIII LXV Th w h l m t b ted by d d l g t i t s  
p d t b y t h V r i t l d w n f m T b l XXXIII XXXVI F Sh d w d T i t m t l s b t d f J p i t Ph b y T b l LXVI



# SATELLITE II

## Tables of the Phenomena

### Equations of the Reduction LVIII

1	2	3	1	2	3
R	Ecl., Oc., Sh., Tr.	$\Delta$ 0 <sup>d</sup> .01	R	Ecl., Oc., Sh., Tr.	$\Delta$ 0 <sup>d</sup> .01
d	d		d	d	
0'00	0'000320	- 10	1'00	0'000422	+ 8
02	301	9	02	438	8
04	282	9	04	455	8
06	264	9	06	471	8
08	246	9	08	486	7
10	229	9	10	500	7
0'12	0'000212	- 8	1'12	0'000513	+ 6
14	195	8	14	525	6
16	179	8	16	536	6
18	163	8	18	547	5
20	148	7	20	556	4
0'22	0'000134	- 7	1'22	0'000563	+ 4
24	122	6	24	570	3
26	110	6	26	575	2
28	100	5	28	579	2
30	90	5	30	582	1
0'32	0'000081	- 4	1'32	0'000584	+ 1
34	74	3	34	584	0
36	68	3	36	583	- 1
38	63	2	38	580	2
40	59	2	40	576	2
0'42	0'000057	- 1	1'42	0'000571	- 3
44	56	0	44	565	4
46	57	+ 1	46	557	4
48	58	1	48	548	5
50	61	2	50	538	5
0'52	0'000065	+ 3	1'52	0'000527	- 6
54	71	3	54	515	6
56	78	4	56	502	7
58	86	5	58	488	7
60	96	5	60	473	8
0'62	0'000106	+ 6	1'62	0'000457	- 8
64	118	6	64	441	8
66	130	6	66	425	9
68	143	7	68	407	9
70	157	7	70	389	9
0'72	0'000173	+ 8	1'72	0'000371	- 9
74	189	8	74	353	9
76	205	8	76	334	9
78	222	9	78	316	9
80	240	9	80	297	9
0'82	0'000258	+ 9	1'82	0'000279	- 9
84	276	9	84	260	9
86	294	9	86	242	9
88	313	10	88	224	9
90	332	9	90	207	8
0'92	0'000350	+ 9	1'92	0'000191	- 8
94	368	9	94	175	8
96	387	9	96	160	7
98	405	9	98	145	7
1'00	0'000422	+ 8	2'00	0'000131	- 7

Applied Constant: +0<sup>d</sup>.000320.

### LIX

1	2	3
A	Ecl., Oc., Sh., Tr.	$\Delta$ 0 <sup>d</sup> .1
d	d	
0'0	0'000061	+ 10
02	82	10
04	101	9
06	114	5
08	121	+ 2
10	120	- 2
1'2	0'000113	- 6
14	97	9
16	78	10
18	57	11
20	36	10
2'2	0'000018	- 8
24	6	5
26	0	- 1
28	2	+ 3
30	12	7
3'2	0'000027	+ 9
34	47	10
36	69	11
38	89	10
40	106	8
4'2	0'000117	+ 4
44	121	+ 1
46	118	- 4
48	108	7
50	91	10
5'2	0'000071	- 11
54	49	11
56	29	9
58	12	7
60	3	- 3
6'2	0'000000	0
64	4	+ 4
66	17	8
68	34	10
70	54	11
7'2	0'000076	+ 10
74	96	9
76	112	7
78	120	+ 3
80	0'000122	- 1

Constant: +0<sup>d</sup>.000061.

# SATELLITE II

## Tables of the Phenomena

### Equations of the Reduction

#### LX

P	Ecl Oc Sh Tr
1850	0 000029
52	2
54	14
56	7
58	
60	0
1862	0 00 00
64	5
66	1
68	20
70	27
1872	0 000033
74	37
76	38
78	35
80	30
1882	0 000022
84	15
86	8
88	3
90	1
1892	0 0000
94	6
96	13
98	
1900	0 000028

P	Ecl Oc Sh Tr
1900	d 0 000028
02	
04	34
06	38
08	39
10	37
	31
1912	0 0000 4
14	16
16	10
18	4
20	
1922	0 000003
24	7
26	13
28	21
30	29
1932	0 000035
34	39
36	40
38	37
40	32
1942	0 000025
44	17
46	10
48	5
1950	0 000000

P	Ecl Oc Sh Tr
1950	d 0 000002
52	3
54	7
56	13
58	20
60	7
1962	0 000034
64	38
66	39
68	37
70	31
1972	0 000024
74	16
76	9
78	4
80	1
1982	0 000001
84	5
86	11
88	18
90	6
1992	0 00003
94	37
96	38
98	35
2000	0 000030

Appli dC t t + 0000

#### LXI

S	Ecl Oc Sh Tr
d	d
00	0 000020
1	14
2	10
3	6
4	4
5	4
06	0 000006
7	10
8	15
9	20
10	26
11	0 000031
2	35
3	36
4	36
5	34
16	0 000030
7	4
8	19
9	13
20	0 000009

C ns t + 0000

#### LXII

Ecl Oc	T	3
d	d	d
000075	00	0 0000 3
73	2	1
71	4	19
72	6	20
74	8	2
76	10	24
0 000078	12	0 0000 6
79	4	27
77	6	25
75	8	23
0 000072	20	2

Appli dC t t + 000049  
Ap t f th Eq ti f Light i f l d d

#### LXIII

U	Ecl Oc Sh Tr	U	Ecl Oc Sh Tr
d	d	d	d
00	0 000030	20	0 000015
1	23	1	10
2	16	2	9
3	11	3	10
4	9	4	13
5	9	5	18
06	0 000012	26	0 000025
7	17	7	32
8	23	8	40
9	31	9	46
10	38	30	50
11	0 000045	31	0 000051
2	49	2	50
3	51	3	47
4	51	4	41
5	48	5	34
16	0 000042	36	0 000027
7	36	7	19
8	28	8	14
9	21	9	10
20	0 000015	40	0 000009

0 t t + 00003

# SATELLITE II

## Tables of the Phenomena

LXIV

Equation of the Reduction

Oc., Tr.

Q	0 <sup>d.0</sup> 0 <sup>d.2</sup> 0 <sup>d.4</sup>			0 <sup>d.6</sup> 0 <sup>d.8</sup> 1 <sup>d.0</sup>			1 <sup>d.2</sup> 1 <sup>d.4</sup> 1 <sup>d.6</sup>			1 <sup>d.8</sup> 2 <sup>d.0</sup> 2 <sup>d.2</sup>			2 <sup>d.4</sup> 2 <sup>d.6</sup> 2 <sup>d.8</sup>			3 <sup>d.0</sup> 3 <sup>d.2</sup> 3 <sup>d.4</sup>			3 <sup>d.6</sup> 3 <sup>d.8</sup> 4 <sup>d.0</sup>		
γ																					
a																					
0	± 6	± 6	± 4	± 3	± 1	± 1	± 3	± 5	± 6	± 6	± 5	± 4	± 3	± 1	± 1	± 3	± 5	± 6	± 6	± 5	± 4
10	± 29	27	22	14	± 5	± 6	15	23	27	29	26	21	13	± 3	± 7	16	23	28	28	26	± 20
20	± 50	47	38	25	± 8	± 10	26	40	48	50	46	37	23	± 6	± 12	28	41	48	50	45	± 35
30	± 71	66	54	35	± 11	± 14	37	56	67	71	65	52	32	± 8	± 17	40	57	68	70	64	± 49
40	± 89	84	67	43	± 14	± 17	47	70	85	89	82	65	40	± 10	± 21	50	72	86	88	80	± 62
50	± 105	98	79	51	± 17	± 20	55	82	100	105	97	76	47	± 12	± 25	59	85	101	104	94	± 73
60	± 117	110	89	57	± 18	± 23	62	92	112	117	108	85	53	± 13	± 28	66	95	113	116	106	± 82
70	± 126	119	96	62	± 20	± 25	66	100	120	126	117	92	57	± 14	± 30	71	102	121	125	114	± 88
80	± 132	124	100	64	± 21	± 26	69	104	126	132	122	96	59	± 15	± 32	74	107	127	131	118	± 92
90	± 133	125	101	65	± 21	± 26	70	105	127	133	123	97	60	± 15	± 32	75	108	128	132	120	± 93
100	± 130	123	99	64	± 21	± 26	69	103	125	130	121	95	59	± 15	± 31	74	106	126	129	118	± 91
110	± 124	117	94	61	± 20	± 24	65	98	119	124	115	91	56	± 14	± 30	70	101	120	123	112	± 87
120	± 114	107	87	56	± 18	± 22	60	90	109	114	106	83	52	± 13	± 27	64	93	110	113	103	± 80
130	± 101	95	77	49	± 16	± 20	53	80	96	101	93	74	46	± 12	± 24	57	82	97	100	91	± 71
140	± 85	80	64	41	± 13	± 17	45	67	81	85	78	62	38	± 10	± 20	48	69	81	84	76	± 59
150	± 66	62	50	32	± 10	± 13	35	52	63	66	61	48	30	± 7	± 16	37	54	63	65	60	± 46
160	± 45	42	34	22	± 7	± 9	24	36	43	45	42	33	20	± 5	± 11	25	37	43	45	41	± 32
170	± 23	± 22	± 17	± 11	± 4	± 4	± 12	± 18	± 22	± 23	± 21	± 17	± 10	± 3	± 6	± 13	± 19	± 22	± 23	± 21	± 16
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190	± 23	± 21	± 17	± 11	± 4	± 4	± 12	± 18	± 22	± 23	± 21	± 16	± 10	± 3	± 5	± 13	± 18	± 22	± 22	± 20	± 16
200	± 44	42	34	22	± 7	± 9	23	35	42	44	41	32	20	± 5	± 11	25	36	43	44	40	± 31
210	± 65	62	50	32	± 10	± 13	34	52	62	65	61	48	30	± 7	± 16	37	53	63	65	59	± 46
220	± 84	79	64	41	± 13	± 16	44	66	80	84	78	61	38	± 9	± 20	47	68	81	84	76	± 59
230	± 101	95	76	49	± 16	± 20	53	79	96	101	93	73	45	± 11	± 24	57	82	97	100	91	± 70
240	± 114	107	86	56	± 18	± 22	60	90	109	114	105	83	51	± 13	± 27	64	93	110	113	103	± 80
250	± 124	117	94	61	± 20	± 24	65	98	118	124	115	91	56	± 14	± 30	70	101	119	123	112	± 87
260	± 130	123	99	64	± 21	± 26	69	103	125	130	121	95	59	± 15	± 31	74	106	126	129	118	± 91
270	± 133	125	101	65	± 21	± 26	70	105	127	133	123	97	60	± 15	± 32	75	106	128	132	120	± 93
280	± 132	124	100	64	± 21	± 26	69	104	126	132	122	96	59	± 15	± 32	74	107	127	131	119	± 92
290	± 126	119	96	62	± 20	± 25	66	100	121	126	117	92	57	± 14	± 30	71	102	121	125	114	± 88
300	± 117	110	89	57	± 19	± 23	62	93	112	117	108	85	53	± 13	± 28	65	95	113	116	106	± 82
310	± 105	99	80	51	± 17	± 20	55	83	100	105	97	76	47	± 12	± 25	59	85	101	104	95	± 73
320	± 89	84	68	44	± 14	± 17	47	70	85	89	82	65	40	± 10	± 21	50	72	86	88	80	± 62
330	± 71	67	54	35	± 11	± 14	37	56	68	71	66	52	32	± 8	± 17	40	58	68	70	64	± 50
340	± 51	48	38	25	± 8	± 10	27	40	48	51	47	37	23	± 6	± 12	29	41	49	50	46	± 35
350	± 29	27	22	14	± 5	± 6	15	23	27	29	27	21	13	± 3	± 7	16	23	28	29	26	± 20
360	± 6	± 6	± 5	± 3	± 1	± 1	± 3	± 5	± 6	± 6	± 6	± 5	± 3	± 1	± 2	± 4	± 5	± 6	± 6	± 6	± 4
370	± 17	± 16	± 13	± 8	± 3	± 3	± 9	± 13	± 16	± 17	± 15	± 12	± 8	± 2	± 4	± 9	± 14	± 16	± 17	± 15	± 12
380	± 39	37	29	19	± 6	± 8	20	31	37	39	36	28	18	± 4	± 9	22	32	37	39	35	± 27
390	± 60	57	46	29	± 9	± 12	32	47	57	60	56	44	27	± 7	± 14	34	49	58	60	54	± 42
400	± 80	± 75	± 60	± 39	± 13	± 16	± 42	± 63	± 76	± 80	± 74	± 58	± 36	± 9	± 19	± 45	± 65	± 77	± 79	± 72	± 56

unit in this Table equals 0<sup>d.0000000</sup>.

No Constant has been added.

The upper sign refers to Occultations, the lower to Transits.

# SATELLITE III

## Tables of the Phenomena

LVI

Reduction to Middle

Argument O

O	Ecl Oc Sh T	3 Δ o or	O	Ecl Oc Sh T	3 Δ o o	O	Ecl O Sh T	3 Δ or	O	E l Oc Sh Tr	3 Δ o or
d	d		d	d		d	d		d	d	
0 00	-0 000440	-27 5	2 00	+0 00 129	+ 5 6	4 00	-0 001499	- 0 1	6 00	+0 000965	+1 1
04	55	27 5	04	30	4 8	04	1577	18 9	04	101	10 4
08	66	27 3	08	3 7	3 9	08	165	17 4	08	1048	8 5
12	768	26 8	12	421	3 0	12	1716	15 9	12	1078	6 6
16	874	6 3	16	511	1 9	16	1777	14 4	16	11 1	4 9
20	978	25 8	20	596	0 6	20	1831	1 6	20	1117	3 0
0 24	-0 001080	-25 1	2 24	+0 0 0676	+19 4	4 24	-0 0 1878	-10 9	6 24	+0 0011 5	+ 1 0
28	1179	4 4	28	751	17 9	28	1918	9 1	28	1125	- 1 0
32	1 75	23 4	32	819	16 3	32	1951	7 3	32	1117	9
36	1366	21 8	36	881	14 8	36	1976	5 4	36	11	4 8
40	1453	21 0	40	937	13 3	40	1994	3 5	40	1079	6 6
0 44	-0 001534	-19 6	2 44	+0 000987	+11 5	4 44	-0 00 004	- 1 5	6 44	+0 001049	- 8 5
48	1610	18 3	48	10 9	9 5	48	0 6	+ 0 5	48	1 11	10 4
52	1680	16 8	52	1063	7 6	52	2000	4	52	966	1 1
56	1744	15 3	56	1090	5 9	56	1987	4 3	56	914	13 8
60	1802	13 6	60	1110	4 1	60	1966	6 1	60	856	15 5
0 64	-0 001853	-11 9	2 64	+0 001123	+ 2 1	4 64	-0 001938	+ 8 0	6 64	+0 00079	-17 1
68	1897	10 1	68	11 7	+ 0 1	68	190	9 9	68	719	18 5
72	1934	8 4	72	11 4	- 1 8	72	1859	11 6	72	64	19 9
76	1964	6 5	76	1113	3 8	76	18 9	13 3	76	560	1 1
80	1986	4 5	80	1094	5 6	80	1753	14 9	80	473	3
0 84	-0 00 000	- 2 6	2 84	+0 001068	- 7 5	4 84	001690	+16 6	6 84	+0 000382	- 3 4
88	2007	- 0 6	88	1034	9 4	88	16 0	18 1	88	286	4 4
92	2005	+ 1 4	92	993	11 1	92	1545	19 5	92	187	5 3
96	1996	3 1	96	945	12 8	96	1464	0 8	96	84	6 0
1 00	1980	5 0	3 00	891	14 5	5 00	1379	1 9	7 00	- 21	26 4
1 04	-0 001956	+ 7 0	3 04	+0 00 8 9	-16 3	5 04	-0 001289	+ 3 1	7 04	0 000127	- 6 9
08	19 4	8 9	08	761	17 8	08	1194	4 3	08	36	7 3
12	1885	10 6	12	687	19 1	12	1095	25 0	12	345	7 3
16	1839	1 3	16	608	20 4	16	994	5 6	16	454	27 5
20	1787	14 0	20	5 4	1 6	20	890	26 3	20	565	7 5
1 24	-0 001727	+15 8	3 24	+0 0 435	- 8	5 24	-0 00 784	+ 6 9	7 24	-0 0 0674	-27 1
28	1661	17 3	28	34	3 9	28	675	27 3	28	78	6 9
32	1589	18 8	32	244	24 9	32	566	27 3	32	889	6 4
36	1511	20 1	36	143	5 5	36	457	7 4	36	993	25 6
40	14 8	21 3	40	+	40	40	347	7 5	40	1094	5 0
1 44	-0 001341	+2 4	3 44	-0 000066	-26 8	5 44	-0 000 37	+ 7 3	7 44	-0 001193	- 4 1
48	1249	3 6	48	174	27 1	48	1 9	7 0	48	1 87	3 1
52	1152	24 6	52	83	27 3	52	- 21	6 6	52	1378	2 3
56	1052	25 3	56	39	27 4	56	+	84	56	1465	21
60	950	25 9	60	50	7 4	60	186	5 1	60	1546	19 5
1 64	-0 000845	+26 6	3 64	-0 000012	-27 4	5 64	+0 000285	+24 4	7 64	-0 0 16 1	-18 0
68	737	27 1	68	721	27 1	68	381	23 5	68	1690	16 6
72	628	7 3	72	829	26 6	72	473	2 3	72	1754	15 1
76	519	7 4	76	934	6	76	559	1 0	76	1811	13 4
80	4 9	27 5	80	1 37	25 5	80	641	0 0	80	1861	11 6
1 84	-0 000299	+ 7 4	3 84	-0 001138	-24 6	5 84	+0 000719	+18 6	7 84	-0 001904	- 9 9
88	19	27 1	88	1234	23 6	88	790	16 9	88	1940	8 1
92	- 8	26 9	92	1327	22 8	92	854	15 4	92	1969	6 3
96	+	5	96	1416	21 5	96	913	13 9	96	1990	4 3
2 00	+	129	4 00	-0 001499	-20 1	6 00	+0 000965	+12 1	8 00	-0 00 0 3	- 2 3

Appl d C t t 00044 Th E t y m t b t d b y t h E q t f T b l LVIII LXIV Th w h l m t b t e d b y d d i g t i t i t  
p d t b y t h V i t i d w n f m T b l XXXIII XXXVI F Sh d d T i t i t m t l b t d f J p t Ph b y T b l LXV

# SATELLITE III

## Tables of the Phenomena

### Equations of the Reduction

LVII

1	2
P	Ecl., Oc., Sh., Tr.
d	d
0'0	0'000020
1	24
2	27
3	30
4	32
5	35
0'6	0'000037
7	38
8	39
9	39
1'0	39
1'1	0'000038
2	37
3	35
4	32
5	29
1'6	0'000026
7	23
8	19
9	16
2'0	13
2'1	0'000010
2	7
3	5
4	3
5	2
2'6	0'000001
7	1
8	1
9	2
3'0	3
3'1	0'000005
2	8
3	11
4	14
5	17
3'6	0'000021
7	24
8	27
9	30
4'0	0'000033

Constant: +0'000020.

LVIII

1	2	3	1	2	3
Q	Ecl., Oc., Sh., Tr.	$\Delta$ 0 <sup>d</sup> 01	Q	Ecl., Oc., Sh., Tr.	$\Delta$ 0 <sup>d</sup> 01
d	d		d	d	
0'00	0'000290	- 3,5	2'00	0'000362	+ 3,3
04	276	3,5	04	375	3,2
08	262	3,5	08	388	3,0
12	248	3,4	12	399	2,9
16	235	3,4	16	411	2,9
20	221	3,4	20	422	2,5
0'24	0'000208	- 3,3	2'24	0'000431	+ 2,4
28	195	3,1	28	441	2,4
32	183	2,9	32	450	2,1
36	172	2,8	36	458	1,9
40	161	2,6	40	465	1,8
0'44	0'000151	- 2,5	2'44	0'000472	+ 1,5
48	141	2,4	48	477	1,1
52	132	2,3	52	481	1,0
56	123	2,0	56	485	0,8
60	116	1,8	60	487	0,4
0'64	0'000109	- 1,5	2'64	0'000488	+ 0,2
68	104	1,3	68	489	+ 0,1
72	99	1,1	72	489	- 0,2
76	95	0,8	76	487	0,5
80	93	0,5	80	485	0,8
0'84	0'000091	- 0,4	2'84	0'000481	- 0,9
88	90	- 0,1	88	478	1,0
92	90	+ 0,1	92	473	1,5
96	91	0,4	96	466	1,6
1'00	93	0,6	3'00	460	1,8
1'04	0'000096	+ 0,9	3'04	0'000452	- 2,1
08	100	1,1	08	443	2,4
12	105	1,4	12	433	2,5
16	111	1,6	16	423	2,6
20	118	1,8	20	412	2,8
1'24	0'000125	+ 2,0	3'24	0'000401	- 2,9
28	134	2,3	28	389	3,0
32	143	2,4	32	377	3,2
36	153	2,6	36	363	3,3
40	164	2,8	40	351	3,3
1'44	0'000175	+ 2,8	3'44	0'000337	- 3,4
48	186	3,0	48	324	3,4
52	199	3,2	52	310	3,5
56	212	3,3	56	296	3,5
60	225	3,3	60	282	3,5
1'64	0'000238	+ 3,4	3'64	0'000268	- 3,5
68	252	3,5	68	254	3,5
72	266	3,5	72	240	3,4
76	280	3,5	76	227	3,3
80	294	3,5	80	214	3,4
1'84	0'000308	+ 3,5	3'84	0'000200	- 3,3
88	322	3,4	88	188	3,0
92	335	3,4	92	176	2,9
96	349	3,4	96	165	2,6
2'00	0'000362	+ 3,3	4'00	0'000155	- 2,4

Applied Constant: +0'000290.

# SATELLITE III

## Tables of the Phenomena

### Equations of the Reduction

LIX

R	Ecl Oc Sh Tr	R	Ecl Oc Sh Tr
d	d	d	d
00	0 000050	20	0 000064
1	43	1	70
2	36	2	76
3	30	3	80
4	25	4	84
5	20	5	87
06	0 000016	26	0 000089
7	13	7	89
8	11	8	88
9	11	9	86
10	11	30	83
11	0 000013	31	0 000080
2	16	2	74
3	21	3	68
4	26	4	62
5	31	5	55
16	000037	36	0 000048
7	44	7	42
8	51	8	35
9	58	9	29
20	0 000064	40	000024

Appli 10 t t + 00005

LX

S	Ecl Oc Sh Tr	S	Ecl Oc Sh T
d	d	d	d
00	0 000010	40	0 000004
2	7	2	3
4	5	4	2
6	3	6	2
8	2	8	3
10	2	50	4
12	0 000003	52	0 000007
4	4	4	10
6	7	6	13
8	10	8	16
20	13	60	17
22	0 000016	62	0 000018
4	17	4	18
6	18	6	17
8	18	8	15
30	17	70	13
32	0 000015	72	0 000010
4	12	4	7
6	9	6	4
8	6	8	3
40	0 000004	80	0 000000

Appli 10 t t + 0000

LXI

D	Ecl Oc Sh Tr	D	Ecl Oc Sh Tr
d	d	d	d
00	0 000010	40	0 000007
2	1	2	6
4	13	4	5
6	14	6	4
8	15	8	3
10	16	50	2
12	0 000017	52	0 000000
4	18	4	2
6	18	6	2
8	18	8	2
20	18	60	3
22	0 000018	62	0 000004
4	17	4	5
6	16	6	6
8	15	8	7
30	14	70	8
32	0 000013	72	0 000010
4	12	4	12
6	10	6	13
8	8	8	14
40	0 000007	80	0 000015

Appli d0 st t + 000

LXII

Lcl Oc	N	3 Sh Tr	Ecl Oc	N	3 Sh Tr
d		d	d		d
0 000085	1850	0 000035	0 000114	1925	0 000006
83	55	37	116	30	4
82	60	38	116	35	4
82	65	38	116	40	4
83	70	37	115	45	5
84	75	36	113	50	7
0 000086	1880	0 000034	0 000110	1955	0 000010
89	85	31	1 7	60	13
92	90	8	104	65	16
96	95	4	1 0	70	0
99	1900	21	97	75	3
0 000103	1905	0 000017	0 000094	1980	0 000026
107	10	13	91	85	9
110	15	10	88	90	3
113	20	7	87	95	33
0 000114	1925	0 000006	0 000086	2000	0 000034

Appli d0 t t + 006  
Ap ti fti Bq ti fLiglti i l d d

# SATELLITE III

## Tables of the Phenomena

LXIII

Equation of the Reduction

Oc., Tr.

$\gamma$	O	0 <sup>d.0</sup>	0 <sup>d.2</sup>	0 <sup>d.4</sup>	0 <sup>d.6</sup>	0 <sup>d.8</sup>	1 <sup>d.0</sup>	1 <sup>d.2</sup>	1 <sup>d.4</sup>	1 <sup>d.6</sup>	1 <sup>d.8</sup>	2 <sup>d.0</sup>	2 <sup>d.2</sup>	2 <sup>d.4</sup>	2 <sup>d.6</sup>	2 <sup>d.8</sup>	3 <sup>d.0</sup>	3 <sup>d.2</sup>	3 <sup>d.4</sup>	3 <sup>d.6</sup>	3 <sup>d.8</sup>	4 <sup>d.0</sup>
a	O	± 9	± 8	± 8	± 7	± 6	± 5	± 4	± 3	± 1	0	± 1	± 3	± 4	± 6	± 6	± 7	± 8	± 8	± 9	± 8	± 8
10	± 54	53	50	46	41	34	26	18	± 8	± 1	10	19	27	35	42	47	51	53	54	53	± 50	
20	± 97	95	91	83	74	62	48	32	± 16	± 1	18	34	49	63	75	84	92	96	97	95	± 90	
30	± 137	135	129	119	105	88	68	46	± 23	± 2	26	48	71	89	107	121	130	136	137	135	± 129	
40	± 174	172	164	150	132	111	86	58	± 29	± 2	33	61	89	113	135	152	165	172	174	171	± 162	
50	± 206	202	193	177	156	132	101	68	± 35	± 2	39	72	105	134	159	180	195	203	206	202	± 191	
60	± 230	227	217	200	176	148	113	76	± 39	± 3	43	81	118	150	179	202	219	228	230	226	± 215	
70	± 249	245	234	215	190	159	122	83	± 42	± 3	46	88	127	162	193	218	236	246	249	245	± 232	
80	± 261	257	245	225	199	167	129	87	± 44	± 3	48	92	134	170	203	228	247	258	261	256	± 243	
90	± 264	260	248	228	201	169	130	88	± 44	± 3	49	93	135	172	205	231	250	261	264	259	± 246	
100	± 260	256	243	225	197	166	128	86	± 43	± 3	48	91	132	169	201	228	246	257	260	255	± 242	
110	± 248	244	233	214	189	159	122	82	± 41	± 3	46	87	127	162	192	217	235	245	248	243	± 231	
120	± 229	225	215	197	174	146	113	77	± 38	± 3	42	81	117	149	177	197	217	226	229	224	± 213	
130	± 202	199	190	175	155	129	100	68	± 33	± 2	37	72	103	132	158	175	192	200	202	199	± 189	
140	± 170	167	160	147	130	109	84	57	± 28	± 2	31	60	87	111	132	149	161	168	170	167	± 158	
150	± 134	132	126	115	102	86	65	45	± 22	± 1	25	47	68	87	104	117	127	132	134	131	± 125	
160	± 92	91	87	80	70	59	45	31	± 16	± 1	18	33	48	60	71	81	88	91	92	91	± 86	
170	± 48	48	46	42	37	31	24	16	± 9	± 1	9	17	25	32	37	43	46	48	48	48	± 45	
180	± 5	± 5	± 3	± 3	± 3	± 2	± 2	± 1	± 1	0	± 1	± 1	± 2	± 2	± 3	± 3	± 5	± 5	± 5	± 5	± 3	
190	± 41	± 40	± 39	± 36	± 31	± 27	± 20	± 14	± 6	± 1	± 7	± 15	± 21	± 27	± 32	± 36	± 39	± 40	± 41	± 40	± 39	
200	± 85	84	80	73	65	54	42	28	± 14	± 1	15	30	43	55	66	74	81	84	85	84	± 79	
210	± 127	125	119	110	97	81	63	42	± 22	± 1	23	45	65	83	99	111	120	125	127	124	± 118	
220	± 164	162	154	142	125	105	81	55	± 28	± 2	31	58	84	107	128	144	156	163	164	162	± 154	
230	± 198	195	186	171	150	127	97	66	± 33	± 2	37	69	101	129	153	173	187	196	198	194	± 184	
240	± 224	221	211	194	171	144	110	74	± 38	± 3	42	79	115	146	175	197	212	222	224	220	± 209	
250	± 245	242	230	212	187	157	120	82	± 41	± 3	46	87	125	159	190	215	232	243	245	241	± 229	
260	± 258	254	242	223	197	166	128	86	± 43	± 3	48	91	132	169	201	226	244	255	258	254	± 240	
270	± 264	260	248	228	201	169	130	88	± 44	± 3	49	93	135	172	205	231	250	261	264	259	± 246	
280	± 261	257	245	225	199	167	129	87	± 44	± 3	48	92	134	170	203	228	247	258	261	256	± 243	
290	± 252	248	236	217	192	161	123	84	± 42	± 3	47	88	129	164	196	220	238	249	252	247	± 234	
300	± 235	230	219	202	178	150	116	79	± 39	± 3	43	83	120	153	182	203	221	231	235	229	± 218	
310	± 210	207	197	182	160	134	103	70	± 35	± 2	39	74	107	137	164	184	199	208	210	206	± 196	
320	± 179	176	168	155	137	115	88	60	± 29	± 2	33	63	91	117	139	157	170	177	179	176	± 167	
330	± 144	142	135	124	109	92	70	48	± 23	± 2	26	51	73	94	111	125	137	142	144	141	± 133	
340	± 104	102	97	90	79	66	52	35	± 18	± 1	20	36	53	68	80	91	98	102	104	102	± 97	
350	± 60	59	57	52	45	39	30	20	± 10	± 1	12	21	31	39	46	53	57	59	60	59	± 56	
360	± 15	± 15	± 15	± 14	± 11	± 10	± 8	± 5	± 1	0	± 3	± 5	± 8	± 10	± 13	± 14	± 15	± 15	± 15	± 15	± 15	
370	± 30	± 30	± 28	± 26	± 23	± 19	± 14	± 10	± 5	0	± 5	± 11	± 15	± 20	± 23	± 26	± 28	± 30	± 30	± 29	± 28	
380	± 74	73	69	64	57	47	36	25	± 12	± 1	13	26	37	48	58	64	70	73	74	74	± 69	
390	± 117	115	109	101	89	74	58	39	± 20	± 1	21	41	60	76	91	102	110	115	116	114	± 108	
400	± 155	± 153	± 146	± 134	± 118	± 99	± 77	± 52	± 26	± 2	± 29	± 55	± 80	± 101	± 120	± 136	± 148	± 154	± 155	± 153	± 145	

No Constant has been applied.

The unit equals 0.000000.

The upper sign applies for Occultations, the lower for Transits.

# SATELLITE III

## Tables of the Phenomena

LXIII *continued*

Equation of the Reduction

Oc, Tr

O γ	4 <sup>d</sup> 0	4 <sup>d</sup> 2	4 <sup>d</sup> 4	4 <sup>d</sup> 6	4 <sup>d</sup> 8	5 <sup>d</sup> 0	5 <sup>d</sup> 2	5 <sup>d</sup> 4	5 <sup>d</sup> 6	5 <sup>d</sup> 8	6 <sup>d</sup> 0	6 <sup>d</sup> 2	6 <sup>d</sup> 4	6 <sup>d</sup> 6	6 <sup>d</sup> 8	7 <sup>d</sup> 0	7 <sup>d</sup> 2	7 <sup>d</sup> 4	7 <sup>d</sup> 6	7 <sup>d</sup> 8	8 <sup>d</sup> 0
d	8	7	6	5	4	3	1		1	3	4	6	6	7	8	9	9	8	8	7	6
0	8	7	6	5	4	3	1		1	3	4	6	6	7	8	9	9	8	8	7	6
10	50	45	41	33	25	17	8	± 2	11	0	28	36	4	47	51	53	54	5	49	45	± 40
20	90	8	73	60	47	30	14	± 3	19	36	51	65	77	85	9	96	97	95	89	81	± 71
30	129	117	103	85	66	43	0	± 4	8	51	73	9	108	12	130	136	137	134	118	116	± 11
40	16	148	130	108	83	54	5	± 5	35	64	93	116	137	154	166	173	174	170	161	147	± 18
50	191	175	154	118	98	64	3	± 6	42	76	109	138	161	181	195	204	206	201	190	173	± 151
60	215	197	173	143	11	73	33	± 7	48	85	12	155	182	04	22	29	230	226	14	195	± 170
70	23	212	187	154	119	79	36	± 8	51	93	13	167	196	220	37	247	249	44	230	21	± 183
80	243	3	196	162	125	8	38	± 8	53	97	138	175	205	30	48	59	61	255	41	221	± 19
90	246	22	198	164	116	83	38	± 8	54	98	140	177	208	233	51	62	264	258	244	23	± 194
100	242	2	194	161	114	81	37	± 8	53	96	137	174	204	230	247	258	60	254	40	20	± 190
110	31	11	186	154	119	78	35	± 7	50	9	132	166	195	219	235	46	248	24	229	209	± 18
120	13	194	171	142	109	7	33	± 7	46	85	11	153	180	201	18	27	9	224	21	193	± 168
130	189	173	152	115	97	64	9	± 6	41	75	107	135	16	179	193	21	202	198	187	171	± 149
140	158	145	118	106	81	54	24	± 5	34	63	90	115	134	150	162	169	170	166	157	144	± 15
150	125	114	10	83	63	42	19	± 4	8	50	70	90	105	118	127	133	134	131	124	113	± 98
160	86	79	69	58	44	9	13	± 3	19	34	49	6	73	8	88	92	92	90	86	79	± 68
170	45	42	36	3	4	15	7	± 1	10	18	26	3	39	43	46	48	48	47	45	41	± 35
180	3	3	3	3	3	1		0	± 1	± 1	± 2	± 1	± 3	± 3	± 5	± 5	± 5	± 5	± 3	± 3	± 3
190	± 39	± 35	± 31	± 6	± 19	± 3	± 6	± 1	± 8	± 16	± 2	± 8	± 3	± 37	± 39	± 41	± 41	± 4	± 38	± 35	± 30
200	± 79	72	64	53	41	27	± 13	± 3	17	3	45	57	67	75	81	85	85	83	78	71	± 63
210	± 118	109	97	79	61	40	± 19	± 4	6	47	67	85	100	112	1	126	117	124	117	108	± 93
220	± 154	140	13	1	77	5	± 4	± 5	33	61	88	110	130	145	157	164	164	161	152	139	± 11
230	± 184	168	148	123	9	6	± 9	± 6	40	73	105	133	155	174	188	196	198	193	183	167	± 145
240	± 209	19	169	14	107	7	± 33	± 7	46	83	119	151	177	199	213	23	24	219	206	19	± 165
250	± 9	9	184	15	117	77	± 35	± 7	50	91	13	164	193	15	33	243	245	240	227	207	± 180
260	± 40	2	194	161	124	81	± 37	± 8	53	96	137	174	204	8	245	256	58	252	38	18	± 190
270	± 46	5	198	164	116	83	± 38	± 8	54	98	14	177	208	33	251	262	264	258	244	3	± 194
280	± 43	223	196	162	115	8	± 38	± 8	53	97	138	175	06	30	248	59	261	255	241	221	± 19
290	± 34	5	189	57	12	79	± 36	± 8	51	93	133	169	198	22	239	50	5	246	33	13	± 185
300	± 8	199	175	145	11	73	± 33	± 7	48	87	14	157	184	06		33	235	228	216	197	± 17
310	± 196	179	157	130	10	66	± 30	± 6	43	78	111	140	166	186	00	208	210	205	194	178	± 154
320	± 167	153	135	111	85	57	± 5	± 5	36	67	95	111	141	158	170	178	179	175	165	151	± 13
330	± 133	12	108	9	68	45	± 0	± 4	30	53	76	97	113	126	137	143	144	141	132	121	± 16
340	± 97	89	77	64	49	33	± 14	± 3	2	38	55	69	81	92	99	103	104	101	96	88	± 76
350	± 56	52	45	37	8	19	± 8	± 2	13	22	32	40	47	53	57	60	60	59	56	51	± 44
360	± 15	± 14	± 11	± 1	± 8	± 5	±	0	± 4	± 6	± 9	± 10	± 13	± 14	± 15	± 15	± 15	± 15	± 14	± 13	± 11
370	± 28	± 5	± 3	± 19	± 14	± 9	± 5	± 1	± 6	± 11	± 16	± 0	± 3	± 26	± 8	± 30	± 30	± 29	± 8	± 5	±
380	± 69	63	56	46	36	3	± 11	± 2	15	8	39	50	59	65	70	74	74	72	68	26	± 55
390	± 18	10	87	7	56	37	± 17	± 4	3	43	61	78	92	102	110	115	116	114	107	99	± 86
400	± 145	± 133	± 116	± 96	± 74	± 49	± 23	± 5	± 31	± 58	± 83	± 104	± 122	± 137	± 148	± 154	± 155	± 152	± 144	± 131	± 114

N O t t h b d d d

l h i t q l o o o

Tl pp ig ppl f O l t a t i t h l f T i t





# SATELLITE IV

## Tables of the Phenomena

LII

Reduction to Middle

Argument J

				3	4					3	4					3	4					3	4						
J	Ecl Sh	Oc Tr		$\Delta$	$\frac{1}{2}\Delta^2$	J	Ecl Sh	Oc Tr		$\Delta$	$\frac{1}{2}\Delta^2$	J	Ecl Sh	Oc Tr		$\Delta$	$\frac{1}{2}\Delta^2$	J	Ecl Sh	Oc Tr		$\Delta$	$\frac{1}{2}\Delta^2$	J	Ecl Sh	Oc Tr		$\Delta$	$\frac{1}{2}\Delta^2$
00	-0001100			-13	0	50	+0000554	+173	-5			100	-003786	-68	+8			150	+0001607	-63	-8								
01		1313	13	+1		51		72	163	5		101		3846	53	8			151		1537	78	8						
02		155	211	1		52		880	153	6		102		3891	37	8			152		145	93	7						
03		1735	208			53		107	141	6		103		390	1	8			153		135	107	7						
04		1940	04	2		54		1162	129	7		104		3933	-5	8			154		1239	121	7						
05		214	199	3		55		1284	115	7		105		3930	+11	8			155		1111	133	6						
06	-000337	-19	+4			56	+0001392	+102	-7			106	-0003911	+28	+8			156	+0000973	-146	-6								
07		525	184	4		57		1487	87	8		107		3875	44	8			157		820	158	5						
08		2705	176	5		58		1566	72	8		108		383	59	7			158		658	169	5						
09		2876	166	5		59		1631	57	8		109		3758	73	7			159		485	177	4						
10		3037	156	5		60		1680	41	8		110		3677	88	8			160		305	185	4						
11	-0003187	-145	+6			61	+0001713	+5	-8			111	-0003582	+103	+7			161	+0000116	-193	-4								
12		3326	13	7		62		1730	+10	8		112		3471	117	7			162	-	81	199	3						
13		3451	119	7		63		173	-7	8		113		3348	130	7			163		82	204							
14		3563	106	7		64		1717	23	8		114		3212	143	6			164		488	208	2						
15		3662	91	8		65		1686	39	8		115		3063	154	5			165		698	12	-1						
16	0003745	-76	+7			66	+0001640	-55	-8			116	-0002904	+164	+5			166	-0000911	-13	0								
17		3814	6	8		67		1577	70	7		117		2735	174	5			167		1124	213	0						
18		3868	46	8		68		1501	84	7		118		556	183	4			168		1337	12	+1						
19		3905	30	8		69		1409	99	7		119		2369	191	4			169		1549	210	1						
20		397	-14	8		70		1303	113	7		120		2175	197	3			170		1757	07	2						
21	-003933	+	+8			71	+0001183	-17	-7			121	-0001975	+203	+3			171	-0001963	-23	3	+2							
22		393	18	8		72		1050	139	6		122		1770	08	2			172		2163	198	3						
23		3897	35	8		73		905	151	6		123		1560	11	+1			173		2358	191	4						
24		3854	51	8		74		749	162	5		124		1348	13	0			174		2545	183	4						
25		3796	65	7		75		58	17	5		125		1135	213	0			175		74	175	4						
26	-000374	+80	+7			76	+0000406	-180	-4			126	-0000922	+1	-1			176	-0002894	-166	+5								
27		3636	96	7		77		2	189	4		127		711	211	1			177		3055	156	6						
28		3533	109	7		78	+	29	196	3		128		500	209				178		3205	143	7						
29		3418	12	7		79	-	170	02	3		129		294	204	2			179		3340	130	7						
30		389	136	7		80		374	206	2		130	-	92	200	3			180		3464	118	7						
31	-0003147	+148	+6			81	-0000581	-209	-2			131	+0000105	+193	-4			181	-0003575	-104	+7								
32		994	159	5		82		79	21	-1		132		94	186	4			182		3672	90	7						
33		83	169	4		83		105	213	0		133		476	178	5			183		3754	75	8						
34		2656	178	5		84		118	13	0		134		649	168	5			184		3822	60	8						
35		474	187	5		85		1431	21	+1		135		811	158	6			185		3874	43	8						
36	-000283	+194	+3			86	-0001642	-210	+1			136	+0000964	+146	-6			186	-0003908	-7	+8								
37		2086	200	3		87		1850	206	3		137		1103	134	6			187		397	-13	8						
38		1884	205	2		88		253	200	3		138		1232	122	7			188		3933	+3	8						
39		1677	09	2		89		25	195	3		139		1346	108	7			189		392	20	8						
40		1466	21	+1		90		244	188	4		140		1447	94	7			190		3894	37	8						
41	-0001254	+213				91	-0002626	-180	+4			141	+0001533	+79	-8			191	-0003848	+53	+7								
42		1040	13	0		92		801	171	5		142		1604	64	8			192		3789	67	7						
43		828	1	-1		93		2967	161	5		143		1660	48	8			193		3714	8	7						
44		617	210	1		94		31	150	6		144		1701	33	8			194		3625	97	7						
45		409	207			95		3266	138	6		145		175	+16	8			195		3521	111	7						
46	-000203	+03	-3			96	-0003397	-15	+7			146	+0001733	0	-8			196	-0003404	+124	+6								
47	-	4	197	3		97		3515	112	7		147		1725	-15	8			197		3273	137	6						
48	+	190	19	4		98		360	98	7		148		1703	31	8			198		3130	149	6						
49		376	182	4		99		3710	83	8		149		1663	48	8			199		2976	160	5						
50	+0000554	+173	-5			100	-0003786	-68	+8			150	+0001607	-63	-8			200	-0002811	+170	+5								

Appli d C ta t oo oo Tl E t y must b ppl m t d by th Eq ti f m T bl LIII LX Th wh l m t b rr t d by d d i g t it it  
p d t by th V r t i d w n f m T bl XXVI XXIX F Sh d d T it it m t l b t d f J p i Ph by T bl LXI

# SATELLITE IV

## Tables of the Phenomena

### Reductions to Middle

LIII

LIV

1	2	3	1	2	3
K	Ecl., Oc., Sh., Tr.	$\Delta$	K	Ecl., Oc., Sh., Tr.	$\Delta$
d	d		d	d	
0.0	0.000750	- 47	5.0	0.001115	+ 39
0.1	703	47	5.1	1153	37
0.2	656	47	5.2	1188	34
0.3	610	46	5.3	1220	31
0.4	564	45	5.4	1250	29
0.5	520	44	5.5	1277	26
0.6	0.000477	- 43	5.6	0.001301	+ 23
0.7	435	41	5.7	1322	20
0.8	395	39	5.8	1340	16
0.9	357	37	5.9	1354	13
1.0	322	34	6.0	1365	9
1.1	0.000289	- 32	6.1	0.001372	+ 5
1.2	258	30	6.2	1375	+ 2
1.3	230	26	6.3	1376	- 1
1.4	206	23	6.4	1373	5
1.5	184	21	6.5	1366	9
1.6	0.000165	- 17	6.6	0.001356	- 12
1.7	150	14	6.7	1342	16
1.8	138	10	6.8	1325	19
1.9	130	7	6.9	1305	22
2.0	125	- 3	7.0	1281	25
2.1	0.000124	0	7.1	0.001255	- 28
2.2	126	+ 4	7.2	1226	31
2.3	132	8	7.3	1194	34
2.4	141	11	7.4	1159	36
2.5	154	15	7.5	1122	38
2.6	0.000170	+ 18	7.6	0.001083	- 40
2.7	189	21	7.7	1042	42
2.8	212	25	7.8	1000	43
2.9	238	28	7.9	956	45
3.0	267	30	8.0	910	46
3.1	0.000298	+ 33	8.1	0.000864	- 46
3.2	332	35	8.2	818	47
3.3	368	37	8.3	771	47
3.4	406	39	8.4	724	47
3.5	446	41	8.5	677	47
3.6	0.000488	+ 43	8.6	0.000630	- 47
3.7	532	45	8.7	584	46
3.8	577	46	8.8	539	45
3.9	623	46	8.9	495	43
4.0	669	47	9.0	453	42
4.1	0.000716	+ 47	9.1	0.000412	- 40
4.2	763	47	9.2	373	38
4.3	810	47	9.3	337	35
4.4	857	47	9.4	303	33
4.5	903	46	9.5	272	31
4.6	0.000948	+ 45	9.6	0.000242	- 28
4.7	992	44	9.7	216	25
4.8	1035	42	9.8	192	22
4.9	1076	40	9.9	172	18
5.0	0.001115	+ 39	10.0	0.000156	- 14

Applied Constant: +0.000750.

1	2	3
L	Ecl., Oc., Sh., Tr.	$\Delta$ od. r
d	d	
0.0	0.000100	+ 6
0.2	111	5
0.4	120	5
0.6	130	5
0.8	139	4
1.0	146	4
1.2	0.000153	+ 3
1.4	159	3
1.6	164	2
1.8	167	+ 1
2.0	168	0
2.2	0.000168	- 1
2.4	166	1
2.6	163	2
2.8	158	3
3.0	153	3
3.2	0.000146	- 4
3.4	138	5
3.6	128	5
3.8	118	5
4.0	109	5
4.2	0.000098	- 5
4.4	89	5
4.6	78	5
4.8	69	5
5.0	60	4
5.2	0.000053	- 4
5.4	46	3
5.6	40	3
5.8	36	2
6.0	33	- 1
6.2	0.000032	0
6.4	33	+ 1
6.6	34	1
6.8	38	2
7.0	42	3
7.2	0.000048	+ 3
7.4	55	4
7.6	64	5
7.8	73	5
8.0	82	5
8.2	0.000093	+ 5
8.4	103	5
8.6	113	5
8.8	123	5
9.0	132	5
9.2	0.000141	+ 4
9.4	149	4
9.6	155	3
9.8	160	2
10.0	0.000164	+ 2

Applied Constant: +0.000000.

# SATELLITE IV

## Tables of the Phenomena

### Reductions to Middle

LV

M	Ecl Sh Oc Tr	M	Ecl Sh Oc T
a	a	a	a
00	0 000050	100	0 000017
02	45	102	17
04	40	104	16
06	35	106	16
08	30	108	17
10	26	110	18
12	0 000023	112	0 000021
14	20	114	4
16	18	116	8
18	17	118	3
20	16	120	37
22	0 000016	122	0 000042
24	17	124	47
26	18	126	53
28	20	128	57
30	23	130	62
32	0 0000 7	132	0 000067
34	31	134	71
36	36	136	75
38	41	138	78
40	46	140	81
42	0 000051	142	0 000083
44	56	144	85
46	61	146	84
48	66	148	84
50	70	150	83
52	0 000074	152	0 000081
54	77	154	78
56	80	156	75
58	82	158	71
60	84	160	67
62	0 000085	162	0 000063
64	84	164	58
66	83	166	53
68	82	168	48
70	79	170	42
72	0 000076	172	0 000037
74	72	174	33
76	68	176	29
78	64	178	24
80	59	180	21
82	0 000054	182	000018
84	49	184	17
86	43	186	17
88	38	188	17
90	34	190	16
92	0 000030	192	0 000016
94	25	194	17
96	22	196	18
98	19	198	2
100	0 000017	200	0 000025

Appli d C ta t + 00005

LVI

E	Ecl Sh Oc Tr
a	a
00	0 00 050
05	55
10	60
15	65
20	69
25	73
30	0 000075
35	77
40	78
45	78
50	77
55	0 000075
60	72
65	68
70	64
75	59
80	0 000054
85	48
90	43
95	38
100	34
105	0 000030
110	6
115	4
120	3
125	
130	0 000022
135	4
140	6
145	29
150	33
155	0 000038
160	43
165	48
170	53
175	58
180	0 000063
185	68
190	71
195	74
200	0 000077

C t t + 00005

LVII

I	Ecl Oc
1850	0 000177
60	179
70	181
80	181
90	18
1900	182
1910	0 000183
20	186
30	189
40	194
50	201
1960	0 000209
70	218
80	226
90	234
2000	0 000240

C t t + 000 5  
p t f tl Eq tl f Ligt l  
f l d

LVIII

I	Sh Tr
	a
1850	0 000123
60	121
70	119
80	119
90	118
1900	118
1910	0 000117
20	114
30	111
40	106
50	99
1960	0 000091
70	82
80	74
90	66
2000	0 000060

C t t + 000 5  
A p r t f th Eq tl f Ligt l  
f l d d

# SATELLITE IV

## Tables of the Phenomena

LIX

Equation of the Reduction

Occ. Tr.

$\gamma$	$0^d.0$	$0^d.5$	$1^d.0$	$1^d.5$	$2^d.0$	$2^d.5$	$3^d.0$	$3^d.5$	$4^d.0$	$4^d.5$	$5^d.0$	$5^d.5$	$6^d.0$	$6^d.5$	$7^d.0$	$7^d.5$	$8^d.0$	$8^d.5$	$9^d.0$
$\gamma$	$\pm 17$	$\pm 17$	$\pm 16$	$\pm 14$	$\pm 12$	$\pm 10$	$\pm 8$	$\pm 5$	$\pm 1$	$\mp 2$	$\mp 5$	$\mp 8$	$\mp 11$	$\mp 13$	$\mp 15$	$\mp 16$	$\mp 17$	$\mp 17$	$\mp 17$
<b>0</b>	$\pm 109$	$107$	$101$	$92$	$79$	$64$	$46$	$28$	$\pm 8$	$\mp 13$	$34$	$51$	$69$	$84$	$95$	$103$	$109$	$109$	$\mp 106$
<b>10</b>	$\pm 197$	$193$	$182$	$166$	$144$	$116$	$84$	$49$	$\pm 13$	$\mp 24$	$60$	$94$	$125$	$151$	$171$	$186$	$195$	$196$	$\mp 191$
<b>20</b>	$\pm 280$	$274$	$259$	$236$	$204$	$164$	$119$	$70$	$\pm 19$	$\mp 34$	$85$	$134$	$178$	$214$	$244$	$265$	$278$	$279$	$\mp 271$
<b>30</b>	$\pm 354$	$347$	$328$	$298$	$258$	$208$	$151$	$88$	$\pm 23$	$\mp 44$	$108$	$169$	$225$	$271$	$308$	$335$	$351$	$352$	$\mp 342$
<b>40</b>	$\pm 418$	$409$	$388$	$352$	$305$	$245$	$178$	$104$	$\pm 28$	$\mp 51$	$127$	$200$	$265$	$321$	$365$	$397$	$415$	$416$	$\mp 410$
<b>50</b>																			
<b>60</b>	$\pm 470$	$460$	$435$	$395$	$343$	$275$	$199$	$116$	$\pm 31$	$\mp 57$	$144$	$224$	$298$	$360$	$409$	$445$	$466$	$468$	$\mp 454$
<b>70</b>	$\pm 507$	$497$	$470$	$427$	$370$	$298$	$216$	$126$	$\pm 33$	$\mp 63$	$155$	$243$	$322$	$388$	$443$	$483$	$503$	$505$	$\mp 490$
<b>80</b>	$\pm 530$	$519$	$492$	$446$	$387$	$311$	$226$	$132$	$\pm 35$	$\mp 65$	$163$	$253$	$336$	$406$	$463$	$502$	$526$	$528$	$\mp 513$
<b>90</b>	$\pm 537$	$526$	$498$	$452$	$392$	$316$	$229$	$134$	$\pm 35$	$\mp 66$	$164$	$257$	$341$	$412$	$469$	$509$	$533$	$535$	$\mp 520$
<b>100</b>	$\pm 528$	$517$	$490$	$445$	$386$	$311$	$225$	$131$	$\pm 34$	$\mp 65$	$161$	$252$	$336$	$404$	$461$	$502$	$524$	$526$	$\mp 511$
<b>110</b>																			
<b>120</b>	$\pm 504$	$494$	$467$	$425$	$368$	$295$	$215$	$125$	$\pm 33$	$\mp 62$	$155$	$241$	$319$	$387$	$440$	$477$	$500$	$502$	$\mp 487$
<b>130</b>	$\pm 464$	$455$	$431$	$392$	$339$	$273$	$198$	$116$	$\pm 30$	$\mp 57$	$142$	$222$	$295$	$357$	$405$	$440$	$461$	$462$	$\mp 449$
<b>140</b>	$\pm 412$	$403$	$382$	$347$	$301$	$242$	$176$	$103$	$\pm 27$	$\mp 50$	$126$	$197$	$262$	$316$	$360$	$390$	$409$	$410$	$\mp 399$
<b>150</b>	$\pm 347$	$340$	$322$	$292$	$252$	$203$	$148$	$87$	$\pm 22$	$\mp 42$	$106$	$166$	$220$	$266$	$303$	$328$	$344$	$345$	$\mp 335$
<b>160</b>	$\pm 272$	$266$	$252$	$229$	$198$	$160$	$115$	$68$	$\pm 17$	$\mp 33$	$83$	$130$	$173$	$209$	$238$	$257$	$270$	$271$	$\mp 263$
<b>170</b>																			
<b>180</b>	$\pm 188$	$184$	$175$	$159$	$138$	$111$	$80$	$47$	$\pm 12$	$\mp 24$	$57$	$90$	$120$	$144$	$164$	$178$	$187$	$187$	$\mp 182$
<b>190</b>	$\pm 98$	$96$	$92$	$83$	$72$	$58$	$42$	$25$	$\pm 6$	$\mp 13$	$30$	$47$	$63$	$76$	$86$	$94$	$98$	$98$	$\mp 96$
<b>200</b>	$\pm 9$	$\pm 8$	$\pm 8$	$\pm 7$	$\pm 7$	$\pm 6$	$\pm 4$	$\pm 2$	$0$	$\mp 1$	$\mp 3$	$\mp 5$	$\mp 6$	$\mp 7$	$\mp 8$	$\mp 8$	$\mp 9$	$\mp 9$	$\mp 8$
<b>210</b>	$\mp 83$	$\mp 82$	$\mp 78$	$\mp 71$	$\mp 61$	$\mp 48$	$\mp 36$	$\mp 20$	$\mp 6$	$\pm 10$	$\pm 26$	$\pm 40$	$\pm 53$	$\pm 64$	$\pm 73$	$\pm 80$	$\pm 83$	$\pm 83$	$\pm 82$
<b>220</b>	$\mp 173$	$169$	$160$	$146$	$126$	$101$	$74$	$43$	$\mp 12$	$\pm 21$	$54$	$83$	$110$	$132$	$151$	$164$	$172$	$173$	$\pm 168$
<b>230</b>																			
<b>240</b>	$\mp 258$	$253$	$239$	$217$	$189$	$151$	$110$	$64$	$\mp 17$	$\pm 32$	$80$	$123$	$164$	$198$	$226$	$245$	$256$	$257$	$\pm 250$
<b>250</b>	$\mp 335$	$328$	$310$	$283$	$244$	$197$	$143$	$83$	$\mp 22$	$\pm 41$	$102$	$157$	$213$	$257$	$292$	$317$	$332$	$334$	$\pm 324$
<b>260</b>	$\mp 403$	$394$	$373$	$339$	$294$	$235$	$171$	$100$	$\mp 26$	$\pm 50$	$123$	$192$	$255$	$308$	$351$	$381$	$399$	$401$	$\pm 389$
<b>270</b>	$\mp 457$	$448$	$424$	$385$	$334$	$269$	$194$	$114$	$\mp 30$	$\pm 56$	$140$	$219$	$290$	$350$	$399$	$433$	$454$	$455$	$\pm 442$
<b>280</b>	$\mp 499$	$489$	$463$	$420$	$364$	$293$	$212$	$124$	$\mp 33$	$\pm 61$	$152$	$239$	$317$	$382$	$435$	$472$	$495$	$497$	$\pm 483$
<b>290</b>																			
<b>300</b>	$\mp 526$	$515$	$488$	$443$	$384$	$308$	$223$	$131$	$\mp 34$	$\pm 65$	$161$	$251$	$334$	$402$	$459$	$498$	$522$	$524$	$\pm 509$
<b>310</b>	$\mp 537$	$526$	$498$	$452$	$392$	$318$	$229$	$134$	$\mp 35$	$\pm 66$	$164$	$257$	$341$	$412$	$469$	$509$	$533$	$535$	$\pm 520$
<b>320</b>	$\mp 532$	$521$	$493$	$448$	$389$	$312$	$226$	$132$	$\mp 35$	$\pm 65$	$163$	$255$	$338$	$408$	$465$	$504$	$528$	$530$	$\pm 515$
<b>330</b>	$\mp 512$	$498$	$474$	$431$	$373$	$300$	$218$	$127$	$\mp 33$	$\pm 63$	$157$	$245$	$325$	$392$	$447$	$485$	$508$	$510$	$\pm 495$
<b>340</b>	$\mp 476$	$467$	$442$	$401$	$347$	$279$	$203$	$118$	$\mp 31$	$\pm 59$	$145$	$228$	$302$	$365$	$416$	$452$	$473$	$474$	$\pm 460$
<b>350</b>																			
<b>360</b>	$\mp 427$	$418$	$397$	$359$	$312$	$251$	$181$	$106$	$\mp 28$	$\pm 52$	$131$	$205$	$272$	$327$	$373$	$405$	$424$	$425$	$\pm 414$
<b>370</b>	$\mp 365$	$358$	$339$	$307$	$267$	$214$	$156$	$91$	$\mp 23$	$\pm 45$	$112$	$174$	$231$	$280$	$318$	$346$	$362$	$363$	$\pm 353$
<b>380</b>	$\mp 292$	$286$	$271$	$246$	$213$	$171$	$125$	$73$	$\mp 19$	$\pm 36$	$89$	$140$	$185$	$224$	$256$	$277$	$290$	$291$	$\pm 282$
<b>390</b>	$\mp 211$	$206$	$195$	$177$	$153$	$123$	$90$	$52$	$\mp 13$	$\pm 27$	$64$	$101$	$134$	$162$	$184$	$200$	$209$	$210$	$\pm 204$
<b>400</b>	$\mp 122$	$120$	$113$	$102$	$89$	$72$	$51$	$30$	$\mp 8$	$\pm 15$	$37$	$58$	$78$	$94$	$107$	$115$	$121$	$121$	$\pm 118$
<b>410</b>																			
<b>420</b>	$\mp 31$	$\mp 31$	$\mp 30$	$\mp 27$	$\mp 23$	$\mp 19$	$\mp 13$	$\mp 7$	$\mp 2$	$\pm 4$	$\pm 10$	$\pm 15$	$\pm 20$	$\pm 25$	$\pm 28$	$\pm 30$	$\pm 31$	$\pm 31$	$\pm 31$
<b>430</b>	$\pm 61$	$\pm 60$	$\pm 56$	$\pm 49$	$\pm 44$	$\pm 36$	$\pm 26$	$\pm 15$	$\pm 4$	$\mp 7$	$\mp 19$	$\mp 29$	$\mp 39$	$\mp 47$	$\mp 53$	$\mp 58$	$\mp 61$	$\mp 61$	$\mp 59$
<b>440</b>	$\pm 151$	$148$	$140$	$127$	$109$	$88$	$64$	$38$	$\pm 10$	$\mp 18$	$46$	$72$	$96$	$116$	$131$	$143$	$150$	$150$	$\mp 146$
<b>450</b>	$\pm 237$	$232$	$220$	$200$	$173$	$138$	$101$	$60$	$\pm 16$	$\mp 29$	$73$	$113$	$150$	$182$	$207$	$227$	$235$	$236$	$\mp 229$
<b>460</b>	$\pm 316$	$\pm 310$	$\pm 293$	$\pm 267$	$\pm 230$	$\pm 185$	$\pm 134$	$\pm 79$	$\pm 21$	$\mp 40$	$\mp 96$	$\mp 150$	$\mp 200$	$\mp 243$	$\mp 276$	$\mp 300$	$\mp 314$	$\mp 315$	$\mp 306$

No Constant has been applied.

The unit equals  $0^s.000001$ .

The upper sign applies for Occultations, the lower for Transits.

# SATELLITE IV

## Tables of the Phenomena

LIX *continued*

Equation of the Reduction

Oc, Tr

J γ	9 0 9 5 10 <sup>d</sup> 0	10 5 11 <sup>d</sup> 0 11 <sup>d</sup> 5	12 <sup>d</sup> 0 12 5 13 0	13 5 14 0 14 5	15 0 15 5 16 0	16 5 17 0 17 5	18 0
0	± 17 ± 15 ± 14	± 12 ± 9 ±	± 4 0 ± 3	± 6 ± 9 ± 11	± 13 ± 15 ± 17	± 17 ± 17 ± 16	± 15
10	± 106 99 89	75 58 41	21 ± 1 ± 19	39 58 74	88 98 106	109 108 104	± 96
20	± 191 179 160	135 106 74	38 ± 1 ± 35	71 105 133	158 177 190	196 195 187	± 174
30	± 71 253 228	192 151 105	54 ± ± 50	1 1 148 190	2 4 251 71	279 78 67	± 46
40	± 34 3 0 87	243 191 13	68 ± 3 ± 64	127 187 41	94 318 34	35 350 337	± 31
50	± 410 378 340	287 25 156	81 ± 3 ± 75	150 2 283	336 376 404	416 413 398	± 368
60	± 454 425 381	322 253 175	91 ± 3 ± 84	169 249 318	376 42 454	467 465 447	± 413
70	± 490 459 411	348 274 190	99 ± 4 ± 91	183 69 344	407 455 490	504 50 483	± 446
80	± 513 480 430	364 86 198	103 ± 4 ± 95	192 81 359	426 477 51	5 7 5 5 504	± 467
90	± 520 486 436	369 290 201	104 ± 4 ± 97	194 85 364	431 483 519	534 53 511	± 473
100	± 511 478 42	363 285 197	102 ± 4 ± 95	191 281 358	4 4 475 510	5 5 5 2 50	± 465
110	± 487 456 409	347 272 188	97 ± 3 ± 92	182 267 342	405 453 487	501 498 480	± 444
120	± 449 421 378	318 250 173	90 ± 3 ± 84	166 46 315	373 417 448	461 460 443	± 409
130	± 399 373 334	282 222 153	80 ± 3 ± 74	149 18 280	331 370 398	409 408 392	± 363
140	± 335 313 281	238 186 130	67 ± 2 ± 6	124 184 235	78 31 335	345 343 33	± 305
150	± 263 246 221	186 146 101	53 ± 2 ± 49	98 144 185	218 244 6	71 0 59	± 40
160	± 18 171 153	1 9 102 71	36 ± 1 ± 34	67 100 1 8	151 169 18	187 187 180	± 165
170	± 96 90 80	68 54 37	19 0 ± 18	36 5 67	78 89 95	98 97 94	± 87
180	± 8 ± 8 ± 7	± 6 ± 5 ± 4	± 1 0 ± 1	± 3 ± 5 ± 6	± 7 ± 8 ± 8	± 9 ± 9 ± 8	± 8
190	± 82 ± 76 ± 68	± 57 ± 45 ± 31	± 17 ± 1 ± 15	± 30 ± 44 ± 57	± 67 ± 75 ± 81	± 83 ± 83 ± 8	± 73
200	± 168 157 141	119 93 65	34 ± 1 ± 31	62 92 118	139 155 167	172 172 165	± 153
210	± 250 234 210	1 8 140 97	50 ± 2 ± 46	93 137 175	07 232 249	257 56 246	± 8
220	± 324 303 272	229 181 125	65 ± 2 ± 60	121 177 228	269 3 0 3 4	333 33 319	± 295
230	± 389 362 327	276 197 151	78 ± 3 ± 73	145 214 273	322 361 389	400 399 383	± 354
240	± 442 414 371	314 246 171	88 ± 3 ± 83	164 242 310	367 411 442	455 454 436	± 40
250	± 483 452 405	342 269 184	97 ± 3 ± 90	180 265 338	401 448 482	496 494 475	± 439
260	± 509 476 427	361 283 197	102 ± 4 ± 95	190 279 356	4 2 473 508	523 520 500	± 463
270	± 520 486 436	369 90 201	104 ± 4 ± 97	194 85 364	431 483 519	534 532 511	± 473
280	± 515 482 432	366 286 198	103 ± 4 ± 96	192 83 361	427 479 514	529 527 506	± 469
290	± 495 464 416	351 276 191	99 ± 4 ± 92	185 271 349	411 460 495	509 507 487	± 451
300	± 460 431 386	326 257 178	93 ± 3 ± 86	172 253 323	383 428 460	473 471 454	± 42
310	± 414 387 347	294 231 159	83 ± 3 ± 77	153 2 7 290	343 384 413	4 5 423 407	± 377
320	± 353 330 296	250 197 136	71 ± 2 ± 66	132 194 48	293 328 353	363 361 348	± 3 1
330	± 282 264 237	200 158 109	57 ± 2 ± 53	106 155 199	235 263 82	90 289 278	± 58
340	± 04 190 171	144 114 79	41 ± 1 ± 39	76 112 143	169 189 204	209 09 201	± 185
350	± 118 111 99	84 66 45	23 0 ± 2	44 65 83	98 110 118	121 121 116	± 1 8
360	± 31 ± 29 ± 25	± 22 ± 17 ± 12	± 6 0 ± 6	± 12 ± 16 ± 21	± 5 ± 28 ± 30	± 31 ± 31 ± 30	± 8
370	± 59 ± 55 ± 50	± 41 ± 33 ± 23	± 12 ± 1 ± 10	± 22 ± 33 ± 42	± 49 ± 56 ± 59	± 61 ± 60 ± 58	± 53
380	± 146 136 122	103 81 54	29 ± 1 ± 27	54 80 102	121 135 146	150 150 144	± 132
390	± 229 215 192	163 128 88	47 ± 2 ± 42	85 126 161	190 213 229	35 234 226	± 209
400	± 306 ± 286 ± 257	± 217 ± 170 ± 118	± 61 ± 2 ± 57	± 114 ± 167 ± 214	± 254 ± 284 ± 305	± 314 ± 313 ± 301	± 278

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## INTRODUCTION

THE following Tables are designed for calculating the positions and phenomena of the Four Great Satellites of Jupiter between the dates 1850 and 2000. The constants upon which they are based are those derived from a discussion of eclipses observed photometrically at Harvard College Observatory from 1878 to 1903 (*Harvard Annals* vol LII parts 1 2) supplemented for the determination of two secular motions by Delambre's collection of ancient eclipses (*Mem Roy Astronom Soc* vol LIX). The expressions which are tabulated represent a theory of the motions which I hope to publish with no avoidable delay. The notation and results of this theory are rehearsed here only so far as they are necessary for understanding the tables but the reader must refer to the later publication for full details including proofs of rules laid down and derivation of all the numbers.

The inequalities of the satellites' motions and the arguments of these depend upon the masses  $m$  and upon certain coefficients  $j = (1 + m)Jb/a$  which arise from Jupiter's figure —  $J$  being the coefficient which Laplace denotes by  $\rho - \frac{1}{2}\phi$   $b$  the equatorial radius of Jupiter and  $a$  the mean value of the projection of the radius vector of the  $i^{\text{th}}$  Satellite upon Jupiter's equator. I find at Jupiter's mean distance  $b = 18.927$  and with the values of  $a$  given below p. xv and the mass of Jupiter as unit

$$\begin{aligned} J &= 0.22273 \\ m &= 0.0004497 \\ m &= 2.536 \\ m &= 7988 \\ m &= 4504 \end{aligned}$$

With these masses I find the period of the Libration of Satellites I II III to be  $2041^{\text{d}}.467$ . I cannot find that the libration itself reaches any sensible amount but the value of its period affects materially the distribution of the larger inequalities between the three satellites.

The co ordinates of the satellites are referred to the centre of Jupiter as origin.

The longitudes which are given on the next page are measured from a parallel to the mean equinox of 1900 along a plane parallel to the mean ecliptic of that date up to the ascending node at  $99.4244$  of a fixed plane of inclination  $1.3098$  and thereafter along this fixed plane. This fixed plane is virtually the plane of Jupiter's instantaneous orbit of 1900 and when reference is made below to the inclination of Jupiter's equator or of a satellite's radius vector to Jupiter's orbit it is this plane which is meant. It is for the purposes of the Tables only that longitudes are reduced to this plane for the greater part of the theory they are measured along Jupiter's moving equator from a certain departure point. Denoting by  $l = nt + \epsilon$  the mean longitude so measured and by  $\pi$   $\omega$  the longitudes of the perijove and node which arise as constants of integration in the forms given to the equations of motion of the  $i^{\text{th}}$  Satellite I distinguish by brackets  $(\epsilon)$   $(\pi)$   $(\omega)$  the corresponding values to which the necessary reduction has been applied for referring them to the chosen fixed plane.



# Tables of the Four Great Satellites of Jupiter

The arguments that occur in the Tables are then combinations of the following quantities :—

Name	Symbol	Value in 1900.0 G.M.T.	Daily Tropical Motion
Mean Longitude : Satellite I	( $\epsilon_1$ )	142°59987	203°488 992 435
Satellite II	( $\epsilon_2$ )	99°55081	101°374 761 672
Satellite III	( $\epsilon_3$ )	168°02628	50°317 646 290
Satellite IV	( $\epsilon_4$ )	234°40790	21°571 109 630
Longitude of Perijove : Satellite I	( $\pi_1$ )	265°719	+ 157 9355
Satellite II	( $\pi_2$ )	196°534	+ 047 1156
Satellite III	( $\pi_3$ )	340°679	+ 006 9513
Satellite IV	( $\pi_4$ )	283°25800	+ 001 8975
Longitude of Node : Satellite I	( $\omega_1$ )	33°299	— 134 0305
Satellite II	( $\omega_2$ )	290°54986	— 032 6993
Satellite III	( $\omega_3$ )	320°705	— 006 9776
Satellite IV	( $\omega_4$ )	7°331	— 001 7554
Longitude Node of Jupiter's Equator	$\Psi$	316°051	+ 000 0359
Mean Anomaly of Jupiter	G	225°4447	[+ 083 0912]
„ „ „ Saturn	G'	175°7586	[+ 033 4598]
„ „ „ Earth	G <sub>r</sub>	358°47	[+ 985 6005]
Longitude of Perihelion of Jupiter	$\Pi$	12°6055	+ 000 0382
„ „ „ „ Earth	$\Pi_r$	101°22	+ 000 0471

*Note.*—The motions of G, G', G<sub>r</sub> are enclosed in [ ] because they are not tropical motions.  $\Pi$  is the longitude of fixed point, and the motion assigned to it is merely the reflexion of the motion of the equinox. The values of  $\Pi$ , G are taken from Hill's *Tables of Jupiter*.

It will be observed that

$$\begin{aligned} n_1 - 3n_2 + 2n_3 &= 0 \\ (\epsilon_1) - 3(\epsilon_2) + 2(\epsilon_3) &= 180^\circ. \end{aligned}$$

In agreement with the notation of the theory, write

$$d_{12} = l_1 - l_2, d_{13} = l_1 - l_3, \dots d_{10} = l_1 - G - \delta G - \Pi,$$

$$\text{whence } d_{12} - 2d_{23} = 180^\circ = d_{13} - 3d_{23};$$

$$g_1 = l_1 - \pi_1, g_2 = l_1 - \pi_2, \dots$$

$$g'_1 = l_2 - \pi_1, g'_2 = l_2 - \pi_2, \dots$$

$$g''_1 = l_3 - \pi_1, \dots$$

$$g'''_1 = l_4 - \pi_1, \dots$$

$$f_1 = g_1 - 2g'_1 = 180^\circ + g'_1 - 2g''_1 = 180^\circ + f'_1, \dots$$

$$h_0 = l_1 - \Psi, h_1 = l_1 - \omega_1, h_2 = l_1 - \omega_2,$$

$$h'_0 = l_2 - \Psi, h'_1 = l_2 - \omega_1, h'_2 = l_2 - \omega_2, \dots$$

$$h''_0 = l_3 - \Psi, \dots$$

$$h'''_0 = l_4 - \Psi, \dots$$

$$H = G + \delta G + \Pi - \Psi, \Lambda = \Pi - \Psi, D = G_1 + \Pi_1 - G - \delta G - \Pi, H_1 = G_1 + \Pi_1 - \Omega + 180^\circ.$$

In these expressions, and below, G is supplemented by a quantity  $\delta G$ , which consists of the two chief inequalities of long period of Jupiter's mean anomaly as given in Hill's *Tables* (pp. 24, 25), namely those of arguments  $2G' - G$  and  $5G' - 2G$ .

## EQUATIONS OF LONGITUDE

The following equations are the quantities which must be added to the mean to give the true longitude of the Satellite, and include all inequalities of which I find the coefficient to

# Introduction

reach  $1'$  as well as some others the retention of which does not involve the introduction of an additional argument

SATELLITE I

No	Argument	Notation of Tables	Coefficient of Sine	No	Argument	Notation of Tables	Coefficient of Sine
1	$d$	A	-0 00395	15	$f$	F G H I	-0 00720
2	$2d$		+ 47152	16	$f$		+ 00394
3	$3d$		+ 00158	17	$f$		+ 00906
4	$4d$		+ 00155	18	$f$		+ 00354
5	$5d$		+ 00012	19 20 21 22 23 24 25	$G+\delta G$ $2(G+\delta G)$ $\Psi-\omega$ $\Psi-\omega$ $\Psi-\omega_3$ $\Psi-\omega$ $\omega-\omega$	J	- 00155
6	$6d$		+ 00005				+ 00035
7	$7d$		+ 00002				- 00074
8	$d$	B	- 00158				+ 00020
9	$2d$		+ 00133				+ 00077
10	$3d$		+ 00014				- 00035
11	$4d$		+ 00002				+ 00096
12	$g$	C D E	+ 00532	26	$2h$	K P Q	- 04200
13	$g_3$		+ 00426	27	$h+h$		- 00074
14	$g_4$		+ 00190	28	$h+h$		- 00028

SATELLITE II

No	Argument	Notation of Tables	Coefficient of Sine	No	Argument	Notation of Tables	Coefficient of Sine
1	$d$	A	-0 01182	19	$2d_3+g_3$	K	+0 00031
2	$2d_3$		+1 07016	20	$4d-g$	L M N	- 00027
3	$3d$		+ 00480	21	$4d-g_3$		+ 00199
4	$4d$		+ 00541	22	$4d-g$		+ 00083
5	$5d$		+ 00038	23	$2d$	O	+ 00034
6	$6d$		+ 00054				
7	$7d_3$		+ 00007	24	$G+\delta G$ $2(G+\delta G)$ $5G-2G+4\delta$ $\pi-\pi$ $\Psi-\omega$ $\Psi-\omega_3$ $\Psi-\omega_4$ $\omega-\omega_3$ $\omega-\omega$	P	- 01047
8	$d_4$	B	- 00065	25			- 00117
9	$2d_4$		+ 00045	26			- 00085
10	$3d_4$		+ 00005	27			+ 00046
11	$g$	C D E F	+ 00092	28			- 01265
12	$g$		+ 00945	29			- 00196
13	$g_3$		+ 03526	30			+ 00092
14	$g$		+ 01483	31			+ 00033
15	$f$	G H I J	+ 01141	32			+ 00056
16	$f$		+ 00765	33	$2h$	Q R S T U	- 04159
17	$f$		- 04455	34	$h+h$		- 01265
18	$f_4$		- 01798	35	$h+h_3$		- 00067
				36	$h+h_4$		- 00016
				37	$2h$		- 00096

# Tables of the Four Great Satellites of Jupiter

## SATELLITE III

No.	Argument	Notation of Tables	Coefficient of Sine	No.	Argument	Notation of Tables	Coefficient of Sine
1	$d_{23}$	A	$-0.06898$	18	$2d_{30}-g_3''$	H	$+0.00054$
2	$2d_{23}$	..	$-0.00109$	19	$d_{34}-g_4'''$	I	$-0.00604$
3	$3d_{23}$	..	$-0.00120$	20	$f_1'$	J	$-0.00036$
4	$4d_{23}$	..	$-0.00007$	21	$f_2'$	K	$-0.00332$
5	$5d_{23}$	..	$-0.00003$	22	$f_3'$	L	$+0.00673$
6	$6d_{23}$	..	$-0.00004$	23	$f_4'$	M	$+0.00293$
7	$d_{34}$	B	$-0.00429$	24	$G+\delta G$	$\alpha$	$-0.01345$
8	$2d_{34}$	..	$+0.01467$	25	$2(G+\delta G)$	..	$-0.00041$
9	$3d_{34}$	..	$+0.00103$	26	$5G'-2G+48^{\circ}.6$	N	$-0.00119$
10	$4d_{34}$	..	$+0.00024$	27	$\pi_3-\pi_4$	..	$+0.00069$
11	$5d_{34}$	..	$+0.00007$	28	$\Psi-\omega_2$	..	$+0.00044$
12	$g_2''$	C	$-0.00030$	29	$\Psi-\omega_3$	..	$-0.00672$
13	$g_3''$	D	$+0.17384$	30	$\Psi-\omega_4$	..	$+0.00060$
14	$2g_3''$	..	$+0.00017$	31	$\omega_3-\omega_4$	..	$+0.00096$
15	$g_4''$	E	$+0.07377$	32	$2h_0''$	O	$-0.03969$
16	$2d_{23}-g_3''$	F	$-0.00078$	33	$h_0''+h_2''$	P	$+0.00044$
17	$2d_{23}-g_4''$	G	$-0.00035$	34	$h_0''+h_3''$	Q	$-0.00469$
				35	$h_0''+h_4''$	R	$-0.00095$

## SATELLITE IV

No.	Argument	Notation of Tables	Coefficient of Sine	No.	Argument	Notation of Tables	Coefficient of Sine
1	$d_{14}$	A	$+0.00058$	12	$2d_{40}-g_4'''$	H	$+0.00635$
2	$d_{24}$	B	$+0.00051$	13	$G+\delta G$	$\alpha$	$-0.03216$
3	$d_{34}$	C	$-0.00229$	14	$2(G+\delta G)$	..	$-0.00116$
4	$2d_{34}$	..	$-0.00115$	15	$2G'-G+173^{\circ}.17$	I	$+0.00036$
5	$3d_{34}$	..	$-0.00025$	16	$5G'-2G+48^{\circ}.64$	..	$-0.00281$
6	$4d_{34}$	..	$-0.00007$	17	$\Psi-\omega_3$	..	$+0.00080$
7	$g_3'''$	D	$-0.02079$	18	$\Psi-\omega_4$	..	$-0.00200$
8	$g_4'''$	E	$+0.84491$	19	$2h_0'''$	J	$-0.03118$
9	$2g_4'''$	..	$+0.00388$	20	$h_0''' + h_4'''$	K	$-0.00641$
10	$d_{34}-g_4'''$	F	$+0.00100$	21	$h_0''' + h_3'''$	L	$+0.00068$
11	$2d_{40}$	G	$+0.00119$	22	$2h_4'''$	M	$-0.00030$

# Introduction

## RADIUS VECTOR AND VARIATION OF MOTION

With the mass of Jupiter for unity I find the following values for  $a^{3n}$  —

Sat I	Sat II	Sat III	Sat IV
1 0006884	1 0003631	1 0002550	1 000 651

If A N refer to Jupiter and we take

$$A N = 1048 \ 35$$

this gives for  $a$  which is the mean value of the projection of the radius upon Jupiter's equator at Jupiter's mean distance from the earth —

111 781	177 852	283 694	498 981
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The mean values of the true radius vector exceed these by the amounts —

0 000	0 003	0 001	0 009
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The Tables give the inequalities of the radius vector in the form — Twice the excess above unity of the ratio of its projected value on the equator to the mean value of the same With sign reversed this also measures with sufficient accuracy the variation with respect to its mean of the motion of the Satellite It is denoted in the theory by the symbol  $2\xi$  and is here referred to as the Variation

The expressions are as follows —

$$\text{Values of } 2(r/a - 1)$$

SATELLITE I

No	Argument	Notation of Tables	Coefficient of Cosine
1	$d$	A	+0 00004
2	$2d$		— 00825
3	$3d$		— 00004
4	$4d$		— 00003
5	$d$	B	+ 00002
6	$2d$		— 00003
7	$g$	C	— 00009
8	$g$	D	— 00007
9	$g$	E	— 00003

SATELLITE II

No	Argument	Notation of Tables	Coefficient of Cosine
1	$d_3$	A	+0 00011
2	$2d_3$		— 01886
3	$3d_3$		— 00011
4	$4d_3$		— 00006
5	$g$	D	— 00017
6	$g_3$	E	— 00062
7	$g_4$	F	— 00026

SATELLITE III

No	Argument	Notation of Tables	Coefficient of Cosine
1	$d$	A	+0 00127
2	$2d$		+ 00003
3	$3d$		— 00003
4	$d_4$	B	+ 00005
5	$2d_4$		— 00028
6	$3d_4$		— 00002
7	$g$	D	— 00303
8	$g_4$	E	— 00129

SATELLITE IV

No	Argument	Notation of Tables	Coefficient of Cosine
1	$d_3$	C	+0 00020
2	$2d_3$		+ 00004
3	$g_3$	D	+ 00036
4	$g_4$	E	— 01475
5	$2g_4$		— 00005
6	$2d_4 - g$	H	— 00011

# Tables of the Four Great Satellites of Jupiter

## LATITUDE

The quantity tabulated below is a certain multiple of the tangent of the inclination to Jupiter's orbit of the radius vector of the Satellite. This is the quantity that is immediately required for eclipses. The multiple in question depends, among other things, upon the ellipticity of Jupiter, that is, the excess of unity above the ratio of his polar to his equatorial diameter. This quantity I take at  $1/15$ .

The multiples then become—

Sat. I  
6.26160

Sat. II  
10.01855

Sat. III  
16.00924

Sat. IV  
28.15626

and the expressions to which they lead :—

Values of  $\zeta_i$

SATELLITE I

No.	Argument	Notation of Tables	Coefficient of Sine
1	$h_0$	K	+0.33918
2	$3h_0$	..	— .00012
3	$h_1$	L	+ .00298
4	$h_2$	M	+ .00110
5	$h_3$	N	+ .00023
6	$h_4$	O	+ .00006

SATELLITE II

No.	Argument	Notation of Tables	Coefficient of Sine
1	$h_0'$	Q	+0.54002
2	$3h_0'$	..	— .00020
3	$h_1'$	Ü	+ .08170
4	$h_2'$	V	— .00014
5	$h_3'$	W	+ .00437
6	$h_4'$	X	+ .00103
7	$2d_{12}-h_2'$	Y	— .00025
8	$h_0'-2H$	Z	+ .00014
9	$2h_0'-h_2'$	} Q,	+ .00009
10	$2h_0'+h_2'$		— .00009

SATELLITE III

No.	Argument	Notation of Tables	Coefficient of Sine
1	$h_0''$	O	+0.84334
2	$3h_0''$	..	— .00029
3	$h_1''$	S	— .04983
4	$h_2''$	T	— .00447
5	$h_3''$	U	+ .00974
6	$h_0''-2H$	V	+ .00051
7	$h_0''+G$	} O,	+ .00009
8	$h_0''-G$		— .00007

SATELLITE IV

No.	Argument	Notation of Tables	Coefficient of Sine
1	$h_0'''$	J	+1.31486
2	$3h_0'''$	..	— .00036
3	$h_0'''-2\Delta$	..	— .00108
4	$h_1'''$	M	+ .13366
5	$h_2'''$	N	— .01456
6	$h_0'''-2H$	O	+ .00216
7	$h_0'''-3H+\Delta$	P	+ .00025
8	$h_0''' + G$	} Q,	+ .00030
9	$h_0''' - G$		— .00029

In these expressions a rule has been adopted parallel to that for the equations of longitude : inequalities are dismissed which correspond to differences of inclination of less than one second of arc, when their recognition would require another argument. In the theory, the

## Introduction

expressions above are denoted by the symbol  $\zeta$  in the Tables below supplemented by the usual tabulation constants they are called shortly the Latitudes The inclination of Jupiter's equator to the fixed plane of his orbit which they embody is  $3^{\circ} 10' 35''$

The expressions for the Longitude Variation and Latitude are complete in themselves and may be used for finding the place of the Satellite at any given time but they require certain additional tables before they can be used for calculating the phenomena The first thing requisite is a knowledge of the time of conjunction heliocentric or geocentric superior or inferior The first tables for each Satellite which I shall next describe show approximately the times when these conjunctions occur

### MEAN CONJUNCTIONS

The synodic periods of the four Satellites I find to be

Satellite	I	<sup>d</sup> 1 769	860	4883
	II	3 554	094	1742
	III	7 166	387	2292
	IV	16 753	552	3007

With these the times of mean superior conjunction with Jupiter may be calculated between the epochs 1850 and 2000 but it is convenient to consider simultaneously with Jupiter's mean place his chief inequalities other than the equation of the centre Those with which I reckon are the following drawn from Hill's *Tables* —

Table VIII	Long Period
IX	Argument III $G - G$
X	, IV $5G - 3G$
XI	V $2G - G$
XII	VI $3G - 2G$

these were calculated over the whole period and applied as corrections to Jupiter's mean place before the mean conjunctions were determined

Inferior mean conjunction is found from these by adding or subtracting one half the synodic period

### EQUATIONS OF TRUE CONJUNCTION

These equations consist of the various inequalities by which the time of mean conjunction may be anticipated or delayed the angular coefficient being expressed in time in proportion with the synodic motion namely at the rate for 1 of synodic motion —

Sat I	Sat II	Sat III	Sat IV
$0^d 004916$	$0^d 009872$	$0^d 019907$	$0^d 046538$

The inequalities are of three kinds (i) the equations of the centre of Jupiter (ii) for geocentric conjunctions Jupiter's annual parallax and (iii) the proper inequalities of the Satellite

The expression for Jupiter's equation of the centre is

$$+5^s 528 \sin (G + \delta G) + 0^s 167 \sin 2 (G + \delta G)$$

I find the expression for the annual parallax

$$\begin{aligned} p = & -11^s 02 \sin D - 1^s 04 \sin 2D - 0^s 14 \sin 3D - 0^s 03 \sin 4D \\ & + \sin G (+1^s 06 \cos D + 0^s 20 \cos 2D) + \cos G (-0^s 55 \sin D - 0^s 12 \sin 2D) \\ & + \sin G (-0^s 38 \cos D - 0^s 07 \cos 2D) + \cos G (+0^s 19 \sin D + 0^s 04 \sin 2D) \end{aligned}$$

# Tables of the Four Great Satellites of Jupiter

The symbols  $G$  or  $G + \delta G$ ,  $D$ ,  $G_1$  are defined on p. xii. The symbols for them as arguments of the Tables are respectively  $\alpha$ ,  $\beta$ ,  $\gamma$ .

These two expressions are converted into time by means of the factors for synodic motion given above.

The proper inequalities of the Satellites are converted into time in the same way. They occur here with the opposite sign to that which they show as equations of longitude. Those which it is necessary to recognise are the following :—

SATELLITE I

No.	Argument	Notation of Tables	Coefficient of Sine
1	$2d_{12}$	$\delta$	$-\overset{d}{0.0023}$
2	$2h_o$	$\epsilon$	$+\overset{d}{0.0002}$

SATELLITE II

No.	Argument	Notation of Tables	Coefficient of Sine
1	$2d_{23}$	$\delta$	$-\overset{d}{0.0106}$
2	$2h_o$	$\epsilon$	$+\overset{d}{0.0004}$

SATELLITE III

No.	Argument	Notation of Tables	Coefficient of Sine
1	$d_{23}''$	$\delta$	$+\overset{d}{0.0014}$
2	$g_3''$	$\epsilon$	$-\overset{d}{0.0034}$
3	$g_4''$	$\zeta$	$-\overset{d}{0.0014}$
4	$2h_o''$	$\eta$	$+\overset{d}{0.0008}$

SATELLITE IV

No.	Argument	Notation of Tables	Coefficient of Sine
1	$g_4'''$	$\delta$	$-\overset{d}{0.0391}$
2	$2h_o'''$	$\epsilon$	$+\overset{d}{0.0014}$

These formulæ, which are used for the first tables of each Satellite, give the time of true conjunction approximately ; I shall now show how to determine the correction, or Complement, as it is called below, which is required to make it exact.

Using the approximate time just found as datum, we take out the true longitude of the Satellite upon Jupiter's orbit at this time from the Tables of Longitude, Latitude and Radius Vector.

To compare this with the place of Jupiter at the same time, we must take out the latter by help of the *Nautical Almanac*, where his heliocentric longitude for each noon is tabulated, referred to the ecliptic and mean equinox of date.\* To make this comparable with the place of the Satellite the reduction from Jupiter's orbit to the ecliptic must be applied to it with sign reversed. As the latter is not given in the *Nautical Almanac*, I have added a table for it, drawn from Hill's *Tables of Jupiter*. The excess of the longitude of Jupiter thus corrected over the longitude of the Satellite, expressed in time in proportion with the Satellite's synodic motion, with the allowance, where this is sensible, for the variation of the motion from its mean, gives the Complement which must be added to the approximate time of datum to get the exact time of superior true heliocentric conjunction upon Jupiter's orbit. This is the conjunction required for eclipses. For shadow-transits we require inferior true heliocentric conjunction ; finding it approximately, as directed above, we make our comparison of the Satellite's

\* But note that before 1897 the practice was to refer it to the *true* equinox, and therefore the nutation with sign reversed must be applied to the tabulated place.

## Introduction

longitude with that of Jupiter increased or diminished by 180 and the complement is determined in the same way as for superior conjunction. For occultations we require superior geocentric conjunction the position of the Earth being reduced to Jupiter's orbit. That is to say the longitude of the Satellite must be found as above *plus* the annual parallax with its natural sign positive before Jupiter's opposition negative after. The annual parallax ( $p$ ) may be computed from the data of the *Nautical Almanac*\* by the formulæ

$$\sin \lambda = R \sin \lambda / \Delta \qquad \sin p = R \sin (\odot - \psi) / \Delta \cos \lambda$$

where  $\lambda$  is Jupiter's heliocentric latitude  $R$  his radius vector and  $\Delta$  his true distance from the Earth  $R$  the radius vector of the Earth  $\odot - \psi$  the longitudes of the Sun and Jupiter in a computing office it will be taken from the calculations of the geocentric places of the planet where it arises naturally. In either case it requires a reduction from the ecliptic to Jupiter's orbit.

The formulæ employed for the two reductions to Jupiter's orbit are the following where  $\Omega$  denotes the longitude of the ascending node of Jupiter's orbit —

Reduction of Jupiter's Longitude from Ecliptic to Orbit  $+27' 0'' \sin 2(\psi - \Omega)$

Reduction of Annual Parallax from Ecliptic to Orbit  $+5'' 2 \cos D [\sin 2(\odot - \Omega) + \sin 2(\psi - \Omega)]$

These reductions are applied to the longitude of Jupiter heliocentric or geocentric before comparing it with the longitude of the Satellite to determine the complement.

For transits of the disc across the planet's face the steps are the same except that we require inferior geocentric conjunction in place of superior and must therefore compare the longitude of the Satellite with that of Jupiter increased by 180 in addition to the annual parallax.

Having thus found the true time of conjunction the true time of the beginning or ending of any defined phase of one of the phenomena of eclipse occultation shadow transit or disc transit is obtained by applying to it two further equations the so named Reduction to Middle and Semiduration the former of which is applied with its natural sign while the latter has a negative or a positive sign according as we seek to find ingress or egress.

### REDUCTIONS TO MIDDLE OF ECLIPSE OR OTHER PHENOMENON

I find the following as the expressions which must be applied to true time of conjunction upon Jupiter's orbit to reduce to the middle of the phenomenon —

SATELLITE I

No	Argument	Notation of Table	Eclipse	Occultation	Shadow	Transit
1	$\sin 2h$	K	$-\overset{d}{0} 000399$	$-\overset{d}{0} 000399$	$-\overset{d}{0} 000525$	$-\overset{d}{0} 000525$
2	$\sin (h + h')$	P	$-\ 000007$	$-\ 000007$	$-\ 000009$	$-\ 000009$
3	$\sin (h + h')$	Q	$-\ 000003$	$-\ 000003$	$-\ 000003$	$-\ 000003$
4	$\sin 2d$	A	$+\ 000035$	$+\ 000035$	$+\ 000035$	$+\ 000035$
5	$\sin H \cos h$	$\gamma K$		$-\ 000065$		$+\ 000086$

\* It should be noted that the *apparent* longitude of the Sun is given not the true hence in correcting it for any fraction of a day ( $x$ ) supplement  $x$  by  $0^d 00577$  the equation of light.



# Tables of the Four Great Satellites of Jupiter

## SATELLITE II

No.	Argument	Notation of Tables	Eclipse	Occultation	Shadow	Transit
1	$\sin 2h_o'$	Q	$-\overset{d}{0.000810}$	$-\overset{d}{0.000810}$	$-\overset{d}{0.001057}$	$-\overset{d}{0.001057}$
2	$\sin (h_o' + h_2')$	R	$-\overset{d}{0.000264}$	$-\overset{d}{0.000264}$	$-\overset{d}{0.000301}$	$-\overset{d}{0.000301}$
3	$\sin (h_o' + h_3')$	S	$-\overset{d}{0.000016}$	$-\overset{d}{0.000016}$	$-\overset{d}{0.000018}$	$-\overset{d}{0.000018}$
4	$\sin (h_o' + h_4')$	T	$-\overset{d}{0.000004}$	$-\overset{d}{0.000004}$	$-\overset{d}{0.000004}$	$-\overset{d}{0.000004}$
5	$\sin 2h_2'$	U	$-\overset{d}{0.000021}$	$-\overset{d}{0.000021}$	$-\overset{d}{0.000021}$	$-\overset{d}{0.000021}$
6	$\sin (\Psi - \omega_2)$	P	$+\overset{d}{0.000019}$	$+\overset{d}{0.000019}$	$-\overset{d}{0.000019}$	$-\overset{d}{0.000019}$
7	$\sin 2d_{23}$	A	$+\overset{d}{0.000061}$	$+\overset{d}{0.000061}$	$+\overset{d}{0.000061}$	$+\overset{d}{0.000061}$
8	$\sin H_x \cos h'_o$	$\gamma, Q$	..	$-\overset{d}{0.000133}$	..	$+\overset{d}{0.000174}$

## SATELLITE III

No.	Argument	Notation of Tables	Eclipse	Occultation	Shadow	Transit
1	$\sin 2h_o''$	O	$-\overset{d}{0.001567}$	$-\overset{d}{0.001567}$	$-\overset{d}{0.002050}$	$-\overset{d}{0.002050}$
2	$\sin (h_o'' + h_2'')$	P	$+\overset{d}{0.000019}$	$+\overset{d}{0.000019}$	$+\overset{d}{0.000019}$	$+\overset{d}{0.000019}$
3	$\sin (h_o'' + h_3'')$	Q	$-\overset{d}{0.000199}$	$-\overset{d}{0.000199}$	$-\overset{d}{0.000229}$	$-\overset{d}{0.000229}$
4	$\sin (h_o'' + h_4'')$	R	$-\overset{d}{0.000039}$	$-\overset{d}{0.000039}$	$-\overset{d}{0.000045}$	$-\overset{d}{0.000045}$
5	$\sin 2h_3''$	S	$-\overset{d}{0.000008}$	$-\overset{d}{0.000008}$	$-\overset{d}{0.000008}$	$-\overset{d}{0.000008}$
6	$\sin (\Psi - \omega_3)$	N	$+\overset{d}{0.000016}$	$+\overset{d}{0.000016}$	$-\overset{d}{0.000016}$	$-\overset{d}{0.000016}$
7	$\sin (\Psi - \omega_4)$	..	$+\overset{d}{0.000003}$	$+\overset{d}{0.000003}$	$-\overset{d}{0.000003}$	$-\overset{d}{0.000003}$
8	$\sin g_3''$	D	$+\overset{d}{0.000008}$	$+\overset{d}{0.000008}$	$+\overset{d}{0.000008}$	$+\overset{d}{0.000008}$
9	$\sin H_x \cos h_o''$	O, $\gamma$	..	$-\overset{d}{0.000264}$	..	$+\overset{d}{0.000345}$

## SATELLITE IV

No.	Argument	Notation of Tables	Eclipse	Occultation	Shadow	Transit
1	$\sin 2h_o'''$	J	$-\overset{d}{0.002834}$	$-\overset{d}{0.002834}$	$-\overset{d}{0.003832}$	$-\overset{d}{0.003832}$
2	$\sin (h_o''' + h_3''')$	L	$+\overset{d}{0.000068}$	$+\overset{d}{0.000068}$	$+\overset{d}{0.000080}$	$+\overset{d}{0.000080}$
3	$\sin (h_o''' + h_4''')$	K	$-\overset{d}{0.000627}$	$-\overset{d}{0.000627}$	$-\overset{d}{0.000728}$	$-\overset{d}{0.000728}$
4	$\sin 2h_4'''$	M	$-\overset{d}{0.000035}$	$-\overset{d}{0.000035}$	$-\overset{d}{0.000035}$	$-\overset{d}{0.000035}$
5	$\sin (\Psi - \omega_4)$	I	$+\overset{d}{0.000050}$	$+\overset{d}{0.000050}$	$-\overset{d}{0.000050}$	$-\overset{d}{0.000050}$
6	$\sin (\Psi - \omega_3)$	..	$-\overset{d}{0.000006}$	$-\overset{d}{0.000006}$	$+\overset{d}{0.000006}$	$+\overset{d}{0.000006}$
7	$\sin g_4'''$	E	$+\overset{d}{0.000028}$	$+\overset{d}{0.000028}$	$+\overset{d}{0.000028}$	$+\overset{d}{0.000028}$
8	$\sin H_x \cos h_o'''$	J, $\gamma$	..	$-\overset{d}{0.000537}$	..	$+\overset{d}{0.000726}$

The last line but one of each of these expressions is not strictly due to the geometrical reduction to middle, but arises from acceleration of the Satellite's motion between conjunction and commencement of the phenomenon.

In the tabulation of these expressions the terms of the equation of light marked (1) on p. xxiv have been included.

# Introduction

## SEMIDURATION OF ECLIPSE OR OTHER PHENOMENON

I find for the value of the semidiameter of Jupiter at mean distance 18'' 927 and consistently with this and with the values of the radii on p xv the values of the coefficient of the chief term of the semidurations of the phenomena are —

	Sat I	Sat II	Sat III	Sat IV
Eclipses Occultations	0 <sup>d</sup> 047957	0 <sup>1</sup> 060367	0 <sup>d</sup> 076262	0 <sup>1</sup> 101421
Shadows Transits	0 <sup>d</sup> 047904	0 <sup>d</sup> 060262	0 <sup>1</sup> 076052	0 <sup>d</sup> 100932

These values are measured from the moment when the centre of the Satellite is in line with the rim of Jupiter and the centre of the Sun or the Earth as the case may be

The chief variable argument of the semidurations is the quantity  $\zeta$  For eclipses  $\zeta$  is given by the formulæ of p xvi For occultations this is supplemented by a term representing the jovicentric latitude of the Earth Taking the inclination of the plane of Jupiter's orbit at 1 3098 and calling  $\Omega$  the longitude of its instantaneous ascending node upon the ecliptic I find for this term the following coefficients multiplied into  $R_1 \sin (\odot - \Omega) / \Delta$  where  $R_1$  is the geocentric distance of the Sun and  $\Delta$  the geocentric distance of Jupiter —

	Sat I	Sat II	Sat III	Sat IV
$R \sin (\odot - \Omega) / \Delta \times$	143127	2 9003	365938	643593

This is to be applied to  $\zeta$  as an additional equation with its natural sign For shadow transit the formula for eclipse must be used but with all the coefficients increased in the ratios —

Sat I	Sat II	Sat III	Sat IV
1 00109	1 00173	1 00275	1 00485

For transits of the disc the additional equation used for occultations must be applied but with the reversed sign and all the coefficients must be increased as for shadows in the ratios given above

The meaning of  $\zeta$  being thus defined and  $2\xi$  denoting the Variation as given on p xv I find for the semidurations —

### SATELLITE I

<i>Eclipse</i>	<i>Occultation</i>
(1) 0 <sup>d</sup> 047957 (1- $\zeta$ ) <sup>1</sup>	The same as for Eclipse
(2) +0 023782 $\times 2\xi$ (1-2 029 $\zeta$ ) (1- $\zeta$ ) <sup>1</sup>	together with the term
(3) +0 000003 cos G	(5) +0 <sup>d</sup> 000005 cos D
(4) +0 000002 sin 2 $h$ +0 <sup>d</sup> 000002 sin <sup>4</sup> $h$	
<i>Shadow</i>	<i>Transit</i>
(6) 0 <sup>1</sup> 047904 (1- $\zeta$ ) <sup>1</sup>	The same as for Shadow
(7) +0 023756 $\times 2\xi$ (1-2 029 $\zeta$ ) (1- $\zeta$ ) <sup>1</sup>	together with the term
(8) -0 000042 cos $h$ (1- $\zeta$ ) <sup>1</sup>	(10) -0 <sup>d</sup> 000005 cos D
(9) +0 000002 sin 2 $h$ +0 000002 sin <sup>4</sup> $h$	

### SATELLITE II

<i>Eclipse</i>	<i>Occultation</i>
(1) 0 <sup>d</sup> 060367 (1- $\zeta$ ) <sup>1</sup>	The same as for Eclipse
(2) +0 030145 $\times 2\xi$ (1-2 011 $\zeta$ ) (1- $\zeta$ ) <sup>1</sup>	together with the term
(3) +0 000007 cos G	(6) +0 <sup>d</sup> 000010 cos D (1- $\zeta$ ) <sup>1</sup>
(4) [+0 000005 sin 2 $h$ +0 000004 sin $h$ ] $\times$ (1- $\zeta$ ) <sup>1</sup>	
(5) [+0 000004 sin 2 $h$ sin ( $h$ + $h$ ) +0 000003 sin $h$ sin $h$ ] $\times$ (1- $\zeta$ ) <sup>1</sup>	

# Tables of the Four Great Satellites of Jupiter

## SATELLITE II—continued

<i>Shadow</i>	<i>Transit</i>
(7) $0.060262 (1 - \zeta_2^2)^{\frac{1}{2}}$	The same as for Shadow
(8) $+0.030092 \times 2\xi_2 (1 - 2.011 \zeta_2^2)(1 - \zeta_2^2)^{-\frac{1}{2}}$	together with the term
(9) $-0.000052 \cos^2 h_o' - 0.000008 \cos h_o' \cos h_2' \times (1 - \zeta_2^2)^{\frac{1}{2}}$ (12)	$-0.000010 \cos D (1 - \zeta_2^2)^{-\frac{1}{2}}$
(10) $[+0.000005 \sin^2 2h_o' + 0.000004 \sin^4 h_o'] \times (1 - \zeta_2^2)^{-\frac{1}{2}}$	
(11) $[+0.000004 \sin 2h_o' \sin (h_o' + h_2') + 0.000003 \sin^3 h_o' \sin h_2'] \times (1 - \zeta_2^2)^{-\frac{1}{2}}$	

## SATELLITE III

<i>Eclipse</i>	<i>Occultation</i>
(1) $0.076262 (1 - \zeta_3^2)^{\frac{1}{2}}$	The same as for Eclipse
(2) $+0.038253 \times 2\xi_3 (1 - 2.004 \zeta_3^2)(1 - \zeta_3^2)^{-\frac{1}{2}}$	together with the term
(3) $+0.000017 \cos G$	(6) $+0.000020 \cos D (1 - \zeta_3^2)^{-\frac{1}{2}}$
(4) $[+0.000016 \sin^2 2h_o'' + 0.000015 \sin^4 h_o''] \times (1 - \zeta_3^2)^{-\frac{1}{2}}$	
(5) $[+0.000005 \sin 2h_o'' \sin (h_o'' + h_3'') + 0.000005 \sin^3 h_o'' \sin h_3''] \times (1 - \zeta_3^2)^{-\frac{1}{2}}$	
<i>Shadow</i>	<i>Transit</i>
(7) $0.076052 (1 - \zeta_3^2)^{\frac{1}{2}}$	The same as for Shadow
(8) $+0.038148 \times 2\xi_3 (1 - 2.004 \zeta_3^2)(1 - \zeta_3^2)^{-\frac{1}{2}}$	together with the term
(9) $-0.000064 \cos^2 h_o'' - 0.000004 \cos h_o'' \cos h_3'' \times (1 - \zeta_3^2)^{\frac{1}{2}}$ (12)	$-0.000020 \cos D (1 - \zeta_3^2)^{-\frac{1}{2}}$
(10) $+0.000016 \sin^2 2h_o'' + 0.000015 \sin^4 h_o'' \times (1 - \zeta_3^2)^{-\frac{1}{2}}$	
(11) $[+0.000005 \sin 2h_o'' \sin (h_o'' + h_3'') + 0.000005 \sin^3 h_o'' \sin h_3''] \times (1 - \zeta_3^2)^{-\frac{1}{2}}$	

When  $\zeta_3$  exceeds .55, I write  $\{1 - (\zeta_3 + \delta\zeta_3)^2\}^{\frac{1}{2}}$  in the terms (1), (7), and omit the terms (2), (8),  $\delta\zeta_3$  being determined by

$$(13) \quad \delta\zeta_3 = +\xi_3 (-1.003 + 2.001 \zeta_3^2) / \zeta_3$$

## SATELLITE IV

<i>Eclipse</i>	<i>Occultation</i>
(1) $0.101421 (1 - \zeta_4^2)^{\frac{1}{2}}$	The same as for Eclipse
(2) $+0.051200 \times 2\xi_4 (1 - 2.001 \zeta_4^2)(1 - \zeta_4^2)^{-\frac{1}{2}}$	together with the term
(3) $+0.000050 \cos G$	(6) $+0.000047 \cos D (1 - \zeta_4^2)^{-\frac{1}{2}}$
(4) $[+0.000039 \sin^2 2h_o''' + 0.000040 \sin^4 h_o'''] \times (1 - \zeta_4^2)^{-\frac{1}{2}}$	
(5) $[+0.000017 \sin 2h_o''' \sin (h_o''' + h_4''') + 0.000016 \sin^3 h_o''' \sin h_4'''] \times (1 - \zeta_4^2)^{-\frac{1}{2}}$	
<i>Shadow</i>	<i>Transit</i>
(7) $0.100932 (1 - \zeta_4^2)^{\frac{1}{2}}$	The same as for Shadow
(8) $+0.050960 \times 2\xi_4 (1 - 2.001 \zeta_4^2)(1 - \zeta_4^2)^{-\frac{1}{2}}$	together with the term
(9) $[-0.000076 \cos^2 h_o''' - 0.000007 \cos h_o''' \cos h_4'''] \times (1 - \zeta_4^2)^{\frac{1}{2}}$ (12)	$-0.000047 \cos D (1 - \zeta_4^2)^{-\frac{1}{2}}$
(10) $[+0.000039 \sin^2 2h_o''' + 0.000040 \sin^4 h_o'''] \times (1 - \zeta_4^2)^{-\frac{1}{2}}$	
(11) $[+0.000017 \sin 2h_o''' \sin (h_o''' + h_4''') + 0.000016 \sin^3 h_o''' \sin h_4'''] \times (1 - \zeta_4^2)^{-\frac{1}{2}}$	

When  $\zeta_4$  exceeds .55, I reject the terms (2), (8) and also (4), (5), (9), (10), (11), and write  $(\zeta_4 + \delta\zeta_4)^2$  in place of  $\zeta_4^2$  in (1), (7), where

$$(13) \quad \delta\zeta_4 = \xi_4 (-1.0096 + 2.0004 \zeta_4^2) / \zeta_4 + \xi_4^2 (4\zeta_4 - \frac{1}{2}\zeta_4^{-3})$$

$$(14) \quad +[-0.00039 \sin^2 2h_o''' - 0.00040 \sin^4 h_o''' - 0.00017 \sin 2h_o''' \sin (h_o''' + h_4''') - 0.00016 \sin^3 h_o''' \sin h_4'''] / \zeta_4$$

$$(15) \quad +[+0.00038 \cos^2 h_o''' + 0.00004 \cos h_o''' \cos h_4'''] (1 - \zeta_4^2) / \zeta_4$$

the last applying for Shadows and Transits only.

# Introduction

## PHASE OF JUPITER

The phase of Jupiter affects the phenomena of transit whether of the shadow or the disc cutting off either the beginning or the end. When the annual parallax is positive that is to say when the geocentric longitude exceeds the heliocentric the ingress of the shadow is delayed and the egress of the disc is anticipated. When the annual parallax is negative the egress of the shadow is anticipated and the ingress of the disc is delayed \*. We have a new diminished Semiduration and Reduction to Middle applicable to the phase affected the other phase following the formulæ already exposed.

I find the following allowances add to the semiduration an equation with argument  $\tan p / \tan 11$  where  $p$  is the annual parallax and with coefficient

	Sat I	Sat II	Sat III	Sat IV
Equation of Semiduration	+0 <sup>d</sup> 000017	+0 <sup>1</sup> 000008	+0 <sup>d</sup> 000004	

and diminish the calculated values of Semiduration and Reduction to Middle by the following fractions of themselves —

	Semiduration	Reduction to Middle
Satellite I	$1 - \cos p + 0.148 \cos p \sin p$	$\tan p$
II	$1 - \cos p + 0.057 \cos p \sin p$	$\tan p$
III	$1 - \cos p + 0.02 \cos p \sin p$	$\tan p$
IV	$1 - \cos p + 0.007 \cos p \sin p$	$\tan p$

## PROGRESS OF AN ECLIPSE

An eclipse takes place gradually and the time shown by the several equations already considered indicates only a single definite phase of it namely the point at which the centre of the Satellite's disc is in line with the rim of Jupiter and the centre of the Sun's disc. If the albedo of the Satellite is symmetrical about its centre the brightness of it as a whole is then diminished by one half or its magnitude has risen by 0<sup>m</sup> 75. The light curve which it follows on either side of this point during the progress of eclipse depends among other factors upon the diameter of the disc. The diameters which I find to correspond with the actual light curves of the eclipses used as material for these Tables are the following at Jupiter's mean distance —

	Sat I	Sat II	Sat III	Sat IV
Diameter of Disc	0.900	0.796	1.397	1.341

The standard light curves which correspond to these show the relation between magnitude and a definite configuration defined by the fraction or multiple of the Sun's radius which is cut off by a line from the Satellite's centre touching Jupiter's rim. This fraction denoted by  $k$  is zero at half brightness negative at full brightness and positive in full eclipse †. The speed with which this standard light curve is described varies with the arguments of the Satellite's position and I find for the varying factor—

$$\pm(1 - 2\xi - \zeta)^{1/2} / (1 + 0.644 \zeta)$$

multiplied by the following coefficients which express the motion in  $k$  for one second of time

	Sat I	Sat II	Sat III	Sat IV
Motions in $k$ for one second	0.4587	0.2285	0.1134	0.0486

The sign is positive for disappearances and negative for reappearances

\* At the limb of Jupiter the shadow unaffected by phase will appear elongated in the direction of Jupiter's orbit but when affected by phase it will be foreshortened in the same direction.

† Disappearance as defined by Laplace corresponds to the phase  $k = 1$

# Tables of the Four Great Satellites of Jupiter

This motion strictly applies to the moment of half-brightness only, and is subject to acceleration for other phases. The acceleration is insensible for Satellites I, II; for Satellites III, IV it has been taken from the formulæ

$$k - t \Delta k_0 = \begin{array}{cc} \text{Sat. III} & \text{Sat. IV} \\ -\cdot 0067 & -\cdot 0125 \end{array} \times (t \Delta k_0)^2 / (1 - \zeta_i^2).$$

But as we do not explicitly meet with the co-ordinate  $k$ , but only a light-curve involving magnitude and time, I have tabulated for these two Satellites not the single curve which shows the relation between the configuration  $k$  and the magnitude  $m$ , but a succession of curves showing for different values of  $\zeta_i$  the relation of  $m$  and a quantity proportional to the time, viz.  $t \Delta k_0$ , which I call  $(k)_0$ ; here  $t$  is the number of seconds elapsed since half-brightness and  $\Delta k_0$  is the motion in  $k$  per second at that instant, as given by the formulæ on p. xxiii.

## THE EQUATION OF LIGHT

We have now shown how to calculate the true time of each phenomenon. It remains to show how to find the apparent time by applying the Equation of Light.

With solar parallax  $8''\cdot 800$ , the time taken by light to traverse unit distance is  $498^s\cdot 565 = 0^d\cdot 0057704$ , and if we take out from the *Nautical Almanac* the logarithm of the true geocentric distance of Jupiter at the time of approximate conjunction, we derive immediately the chief part of the equation. It is subject to the following corrections:—(1) in eclipses and occultations it is increased, and in shadows and transits diminished, by the constant time taken to describe the radius vector of the Satellite's orbit; this has the following values:—

Sat. I	Sat. II	Sat. III	Sat. IV
$0^d\cdot 000016$	$0^d\cdot 000026$	$0^d\cdot 000041$	$0^d\cdot 000072$ .

(2) during the passage of light across Jupiter's orbit the position of the Earth has changed, diminishing the distance before Jupiter's opposition and increasing it after by an amount  $+0^d\cdot 000003 \sin D$ , which is the same for all the satellites; (3) the actual moment when the distance from Jupiter to the Earth is wanted, is not the time of conjunction, but the same diminished or increased by the semiduration; the effect of recognising this is the same as increasing the semiduration by a fraction of itself equal to  $\cdot 000091 \sin D$ , which may be taken at the following values:—

Sat. I	Sat. II	Sat. III	Sat. IV
Coefficient of $\sin D$ : $+0^d\cdot 000004$	$+0^d\cdot 000005 (1 - \zeta_2^2)^{\frac{1}{2}}$	$+0^d\cdot 000007 (1 - \zeta_3^2)^{\frac{1}{2}}$	$+0^d\cdot 000009 (1 - \zeta_4^2)^{\frac{1}{2}}$ .

The sign of this equation is the natural sign of  $\sin D$ . The first of these corrections is united with the reduction to middle for each Satellite and the third with the semiduration.

I have now explained all the formulæ upon which the calculations are based, and I shall proceed to show how these are reduced to tables.

## ARRANGEMENT OF THE TABLES

In the tables that follow, tabulation constants have been applied in the usual manner, adding such quantities to the minor equations as make them always positive and subtracting the sum of these from the main equation. The quantity so applied is noted at the foot of each table. But where an equation or group of equations is liable to be sometimes applied and sometimes not, it is necessary to treat it in a different way from those which are applied in

## Introduction

every case. Such a group is illustrated by the annual parallax of Jupiter which applies for geocentric conjunction but not for heliocentric. In these cases it has not been possible to banish negative signs altogether from the tables: the minor equations *of the group* have been made positive and the sum of the constants used subtracted from the chief equation: the group must then be applied or not as a whole recognising the natural sign which it shows. When any or all of the letters E O S T are shown in prominent connection with any of the tables they indicate that phenomenon to which that table applies.

The differences employed throughout are *upon the line* and each is equal to the mean of the preceding and following interlinear differences. Where second differences are sensible they will follow the formula

$$f(a+x) = f(a) + x\Delta + \frac{1}{2}x^2\Delta$$

and the quantity shown in the second difference column is  $\frac{1}{2}\Delta^2$ . Hence the rule will be for the interval  $x$  —*Correct the first difference entry by  $x$  times the second difference entry which stands opposite to it and apply  $x$  times this corrected quantity to the chief entry*

It has often appeared convenient to give the value of the difference  $\Delta$  which corresponds to a fraction only of the interval between successive tabulations of the argument. Thus the latter interval may be say  $2^d$  but  $\Delta$  as may be seen at the head of its column will measure the change in  $1^d$ . We then ask what fraction of  $1^d$ —not of  $2^d$ —is the interval  $x$  and multiply this fraction into  $\Delta$ . In the tables where second differences appear the quantity tabulated as  $\frac{1}{2}\Delta^2$  has been modified agreeably so that the rule for their use is that which is given above unchanged. For example taking from Table XXII of Satellite I

K	Equation	$\Delta_{001}^d$	$1\Delta$
$0^d 155$ 160	$0^{\circ} 03255$ 3190	$-13.5$ 12.5	$+10$ 10

and noting that the comma ( , ) is placed to the right of the place where the last digit of the equation would stand to take out the equation for argument  $15731$  multiply  $231$  into  $+10$  add and to  $\Delta$  giving  $-13.3$  multiply  $231$  into  $-13.3$  giving product  $-31$  and the required equation is  $0^{\circ} 03224$ .

An attempt has been made to mitigate the waste of effort arising from our irregularly divided units by employing within the compass of the tables only the decimal of a day and the decimal of a degree. To help the conversion from hours minutes and seconds of time and minutes and seconds of arc and conversely short auxiliary tables have been added at the end (Tables CVI–CIX).

To simplify the corrections of the numerous arguments for fractions of a day the known device has been employed of tabulating the value of the argument under the form *time elapsed from its zero point* thus for example to take out the values of arguments corresponding to Apr 17<sup>d</sup> 238300 we write 238300 upon a slip and carrying it along the line where the arguments are given for Apr 17<sup>d</sup> 0 add it to each entry and write down the sum as the extract required. A disadvantage of this plan is that when the complete period of the argument is exceeded it must be deducted and it is as a rule more trouble to deduct an irregular decimal of a day than 360. It is done with least trouble by writing or printing (say in brackets) the complement of the period of each argument at the place where the argument is to stand, and adding this in or not as may be required. But to make it less

# Tables of the Four Great Satellites of Jupiter

frequently necessary, the calculation of each table is carried somewhat beyond a complete period of its argument to such a distance as the size of the page may allow.

As already explained, the tables of each Satellite fall into three portions : first, Approximate Tables, showing the times of true conjunction, and designed as a guide in computing eclipses and the other phenomena ; second, complete Tables of Longitude, Latitude and Radius Vector, giving the place of the Satellite at any specified time with all necessary accuracy ; and third, Tables of the Phenomena, showing how to derive the true time of occurrence of any of these from a known time of true conjunction upon Jupiter's orbit. Besides these tables which belong to each Satellite in particular, there are Auxiliary Tables whose use is common to all. These show the reductions of the Annual Parallax and Jupiter from the ecliptic to Jupiter's orbit, the equation of light, and the conversion of  $^h m^s$  to decimals of a day, of  $' ''$  to decimals of a degree, and conversely. I proceed to describe these different portions in detail.

## SATELLITE I

### APPROXIMATE TABLES OF CONJUNCTION

Table I.—Column 1 shows the year, leap year being indicated by \*. Column 2 shows the true date of superior heliocentric conjunction of the Satellite and Jupiter, the Satellite's place being taken at its mean, but Jupiter's place being corrected for his chief perturbations, specified above (p. xvii). Column 3 shows the further effect which these perturbations would have in anticipating or retarding conjunctions at a later part of the same year ; it must be applied to the entry of column 2. Column 4 shows under the name of argument  $\alpha$ , and in terms of days elapsed since its zero-value, the value of the angle  $G + \delta G$  defined on p. xii. Column 5 shows under the name  $\beta$  the value of the angle  $D$  defined on p. xii. Column 6, argument  $\gamma$ , gives the value of the angle  $G$ , of p. xii. Column 7, argument  $\delta$ , gives  $2d_{12}$ . Column 8, argument  $\epsilon$ , gives  $h_0$ . The values are those which belong to the times given in column 2, allowing for the application of certain tabulation constants which are specified in the margin of the table. If inferior heliocentric conjunction is wanted, the half synodic period  $0^d.8849$  must be written upon a slip and added to each entry as it is taken out. The period of each argument is given at the foot of its column.

Table II shows the days of the year occupied in any complete number of synodic revolutions. These dates refer to ordinary years ; they must be diminished in leap year by  $1^d$  after Feb. 28. Columns 3, 4, 5 give the corresponding motions of the arguments. The entries are to be added to those of Table I. The arguments  $\alpha$ ,  $\beta$ ,  $\gamma$  are now complete ;  $\delta$ ,  $\epsilon$  must be corrected further by applying to them the equation to argument  $\alpha$  (Table III), which measures the time by which conjunction is anticipated or retarded owing to Jupiter's equation of the centre, and also, when geocentric conjunction is in question, by the annual parallax from Tables IV, V, VI.

The equation of Table III represents the terms  $+5^{\circ}.528 \sin (G + \delta G) + 0^{\circ}.167 \sin 2 (G + \delta G)$ , reduced to time as explained on p. xvii, and must be applied to the entries of columns 7, 8 of Table I as well as to the time of mean conjunction taken from column 2.

Tables IV, V, VI taken together give the Annual Parallax,  $p$ . As this group of equations has not always to be applied, its natural sign remains. Tables V, VI have been rendered positive, but IV may be either positive or negative. The three must be taken as a whole and, to find geocentric conjunction for occultations and transits, must be applied to the time of mean heliocentric conjunction (col. 2) and to the arguments  $\delta$ ,  $\epsilon$  (cols. 7, 8) of Table I.  $p$  is

# Introduction

wanted also as argument for phase effects upon shadows and transits (Table LI) For eclipses  $p$  and the argument  $\gamma$  are not wanted

Table IV represents the first line of the expression for  $p$  on p xvii

Table V is a table of double entry with arguments  $\beta$   $\alpha$  representing the second line of the same

Table VI is a table of double entry with arguments  $\beta$   $\gamma$  and represents the third line of the same

Tables VII VIII give equations with arguments  $\delta$   $\epsilon$  which represent the terms of Satellite I on p xviii When these are applied to the time of conjunction its correction is complete and the sum of the various entries gives approximately the time of true conjunction heliocentric or geocentric superior or inferior

## TABLES OF LONGITUDE RADIUS VECTOR AND LATITUDE

Table IX shows in column 2 the mean longitude of Satellite I at the beginning of each year less a tabulation constant 0 60000 Columns 3-19 give the corresponding values of the arguments A-Q required for correcting it and for finding the radius vector and latitude

The significance of these arguments is given on pp xiii xvi The period of each argument is given at the foot All are expressed in days except J which refers to long period inequalities for this the year is used

Table X shows the motions of the same quantities for each day of the year After Feb 28 in leap years the date in column 1 must be diminished by a unit The correction of the motion of the arguments (cols 3-16) for the fraction of a day is made on this table by writing the fraction upon a slip and adding it to the entry as it is taken out \* but for mean longitude (col 2) the correction is made by Table XI This table gives the motions of mean longitude from 0<sup>d</sup> 01 to 1<sup>d</sup> 00 and from 0<sup>d</sup> 0001 to 0<sup>d</sup> 0100 To take out from the latter the motion say for 0<sup>d</sup> 007358 we take the correction for 0<sup>d</sup> 0058 divide it by 100 and apply it to that for 0<sup>d</sup> 0073 this step may be done mentally

Tables XII-XXIV give the equations for reducing the Satellite's mean longitude to true longitude upon Jupiter's orbit The expressions included under each argument are shown above p xiii The equations must be taken out as they stand and applied to the mean longitude

Tables XXV-XXIX must be taken as a single group the first carries the sign + or - the others have all been rendered positive Together they represent the expressions of p xv which measure  $2(r/a - 1)$  or the doubled variation of the radius vector of the Satellite projected upon Jupiter's equator compared to its mean or again with sufficient accuracy the corresponding variation of the motion of the Satellite in longitude if the sign is reversed The entries of Tables XXV-XXIX must be taken out as they stand preserving the natural sign of the first Their sum is the quantity called below the Variation and appearing as an argument in Table XLIV and elsewhere

Tables XXX-XXXIV represent the expressions of p xvi with a positive constant added to each the sum of these additions being 40000 Their sum is the quantity called the Latitude below and appears again as an argument of Table XXXVII which shows the corresponding angle of the radius vector of the Satellite above Jupiter's orbit and also in Tables XL XLIV LIII for eclipses

Table XXXV is a direction for modifying the latitude as taken for Tables XXX-XXXIV

But in correcting J it must be remembered that the unit is a year and the fraction must be divided by 365 See also a remark on p xxviii relative to the correction of Arg K



# Tables of the Four Great Satellites of Jupiter

in consequence of the jovicentric latitude of the Earth, in accordance with the expressions of p. xxi. The expression follows the natural sign of  $\sin(\odot - \Omega)$  for occultations, but the reversed sign for transits. The values of  $R_1$ ,  $\Delta$  and  $\odot$  must be taken from the *Nautical Almanac*; the value of  $\Omega$  reproduced from Hill's *Tables of Jupiter*, p. 144, is shown in Table C.

Table XXXVI shows a further correction to the latitude for shadows and transits in agreement with the statements on p. xxi.

The corrections from Tables XXXV, XXXVI must be applied in the appropriate cases to the latitude derived from Tables XXX–XXXIV before the latter is used as an argument for semiduration of any phenomenon other than eclipse in Tables XL, XLI.

## TABLES OF THE PHENOMENA

The first thing required is the exact moment of true conjunction upon Jupiter's orbit, as explained upon p. xviii. The approximate time is indicated by Tables I–VIII. The true longitude of the Satellite at this moment is taken from Tables IX–XXIV. The longitude of Jupiter at the same moment, upon the ecliptic, referred to the mean equinox, is taken from the *Nautical Almanac*\*, and is corrected by applying to it the entry of Table CI, which is reproduced from Hill's *Tables of Jupiter*, p. 144. When it is a question of occultations or transits, the annual parallax upon the ecliptic must also be computed by the formulæ of p. xix, reduced to Jupiter's orbit by Tables CII, CIII, and added with its natural sign to the reduced longitude of Jupiter. The resulting angle must be converted to decimals of a degree by Table CVI, and its excess determined above the longitude of the Satellite at the same time. Tables XXXVIII, XXXIX show the equivalent of this excess in time, or the Complement which must be applied with its natural sign to derive the exact time of true conjunction from the approximate time which Tables I–VIII have indicated. Tables XXXVIII, XXXIX assume the Satellite to have its mean motion; to correct for the true motion it is only necessary to multiply the entries of these tables by the Variation as taken from Tables XXV–XXIX, but for Satellite I this correction is seldom sensible.†

Tables XL–XLIV form a group expressing the semiduration in agreement with the formulæ of p. xxi. The argument of Table XL is the latitude as derived from Tables XXX–XXXVI or such of these as are applicable. Column 2 shows the value of the main term for eclipses and occultations, numbered (1) on p. xxi; column 4 shows the correction that is to reduce it to the value (6) of p. xxi which is appropriate to shadows and transits. Table XLI gives the value of the terms (4) on the left and (8), (9) on the right. Table XLII gives the term (3); this term is sensible only for eclipses and occultations, hence the equation of this table preserves its natural sign.

Table XLIII represents the terms (5) and (10) together with a certain term properly belonging to the equation of light and due to the motion of the earth pending the semiduration of the phenomenon which is given as (3) on p. xxiv. Table XLIV is a table of double entry representing the terms (2) or (7), the difference between which is insensible. Its arguments are Latitude and Variation. This completes the group; then the sum of the equations from Tables XL–XLIV being found, it must be applied to the exact time to true conjunction with a negative sign for the ingress of the phenomenon and a positive sign for

\* At the same time the logarithm of Jupiter's true distance from the Earth is taken out for use as argument in Table CIV.

† For perfect accuracy the complement may also be applied as a correction to Argument K before the latter is used to determine the latitude.

## Introduction

egress But it must be noted that for shadows and transits one or other of these cases is first liable to a further correction for phase by Table LI as explained below

The next group of tables gives the reduction from conjunction to the middle of the duration of the phenomenon Tables XLV–L form this group Table XLV shows to left and right of the argument the values of line 1 of the expressions given on p xix With these are united constant portions of the equation of light denoted by (1) on p xxiv The natural sign of the entry must be preserved The second third and fourth lines of the same expression are given in Tables XLIX L XLVIII the entries in which have been made positive The fifth line is represented by the Tables XLVI XLVII These are alternatives and as each applies to one phenomenon only the entries appear with their natural signs they are tables of double entry with arguments  $K \gamma$  Having formed the sum of the equations of the group XLV–L so far as they apply we add it with its natural sign to the time of conjunction but it should first be corrected for the unequal motion of the Satellite by adding to it its product by the variation in the cases when this product is sensible It is also liable to correction for either ingress or egress of shadows and transits owing to phase Table LI shows the corrections that must be applied on this account both to semiduration and to reduction When the annual parallax  $p$  is positive that is before Jupiter's opposition to the Sun the corrections apply to shadow ingress and transit egress when  $p$  is negative they apply to shadow egress and transit ingress Table LI follows the formulæ of p xxiii Column 1 shows the additional equation of the semiduration to be included with those of Tables XL–XLIV Columns 3 5 show the fractions by which the semiduration and reduction that have been calculated must be diminished before applying these quantities to the time of conjunction as directed above

Tables LII LIII LIV show the light curve of eclipse in agreement with the formulæ of p xxiii Table LII gives the standard curve The observed light curve in which magnitude and time in seconds are the co ordinates may be reduced for comparison with this by entering Table LIII with latitude as argument correcting the entry from Table LIV and multiplying into the observed time the value of the motion of the standard co ordinate  $k$  per second which is thus found When the observed light curve is thus made comparable with the standard curve the correction which the observation shows to an ephemeris derived from these tables will be indicated by that value of  $k$  in the observed light curve which corresponds to  $k=0$  in the standard curve

## SATELLITE II

The tables of Satellite II follow the same general plan as those of Satellite I and their description may therefore be somewhat compressed

### APPROXIMATE TABLES OF CONJUNCTION

The description and use of these tables is identical with that given for Satellite I changing only the value of the half synodic period to  $1^d 7770$  and the arguments designated by  $\delta \epsilon$  to  $2d_3 2h$  as stated on p xviii

### TABLES OF LONGITUDE LATITUDE AND RADIUS VECTOR

These tables again follow closely the corresponding tables for Satellite I The arguments run from A to Z and their significance is shown on pp xiii xvi The long period inequalities with which is included the Annual Equation with argument  $G + \delta G$  are tabulated under the years all the others are expressed in days In Table X the correction for the fraction of a day

# Tables of the Four Great Satellites of Jupiter

is made as for Satellite I by an adding slip, except for the mean longitude, which is provided for in Table XI. The equations of longitude, arising from the various arguments, are shown in Tables XII–XXXII, of which the last five relate to the reduction to Jupiter's orbit. After the longitude comes the group of equations, XXXIII–XXXVI, which represent the expression  $2(r, \alpha, -1)$  given on p. xv. The first member of this group has a sign + or –; the others are positive. The sum of this group of equation is termed the Variation, and appears as argument in Table LVI, and elsewhere for converting mean motion into true. Tables XXXVII–XLIV represent the expressions of p. xvi, together with tabulation constants amounting in all to 70000. Their sum is termed the Latitude, and appears again as argument of Table XLVII, which shows the corresponding inclination to Jupiter's orbit of the radius vector to the Satellite. Tables XLV, XLVI show how to modify it for the purposes of occultations, shadows and transits. With or without these additions, as may be proper, it appears again as argument of Tables L, LIII, LVI for finding the semiduration of eclipse or other phenomenon, and in Table LXVIII for finding the rate of progress in the standard light-curve in eclipse. In respect to Table XLV, which allows for the jovicentric latitude of the Earth, the remarks on p. xxviii in connection with Satellite I apply unchanged.

## TABLES OF THE PHENOMENA

The plan of these tables is the same as for Satellite I; the true longitude of the Satellite having been found at the approximate time of conjunction given by Tables I–VIII, it must be compared with the true longitude of Jupiter at the same instant—heliocentric for eclipse and shadow, geocentric for occultation and transit. The computations that are necessary for this comparison are stated on p. xxviii and need not be repeated here. The excess of the longitude of Jupiter over that of the Satellite gives the complement, in angle, and Tables XLVIII, XLIX show how to convert this into time in proportion to the mean synodic motion; and the complement in time, with its natural sign, and increased by its product by the Variation (Tables XXXIII–XXXVI), in order to allow for the difference of true synodic motion from the mean, applied to the adopted approximate time of conjunction, gives the exact time. This is conjunction in longitude, upon Jupiter's orbit. We then have two groups of tables (Tables LVII–LXV) containing the terms of reduction from conjunction to the middle of the phenomenon of eclipse, or whatever it may be, and Tables L–LVI containing the semiduration or portion applicable with opposite sign according as we seek the phenomenon of ingress or egress. Taking the latter group first, we next take the Latitude as argument (Tables XXXVII–XLIV, with XLV, XLVI); it is supposed in the theory that this is taken out at the exact time of conjunction; hence for perfect accuracy, before the latitude is derived, the complement in time should be added to the values of the arguments Q–Z, which otherwise stand for the approximate time only given by Tables I–VIII. With the latitude so found we enter Table L; in this table column 2 represents line (1) of p. xxi, being the main part of the semiduration for eclipses and occultations; column 4 represents the correction required for shadows and transits in order to pass from line (1) to line (7), p. xxii. Table LI, argument  $\alpha$ , represents line (3); this term is wanting in the theory of shadows and transits, hence it appears in the tables with its natural sign and no tabulation constant. Table LII, argument  $\beta$ , represents a term of the equation of light, given on p. xxiv. Table LIII, with arguments  $\beta$  and the latitude, represents the terms (6) and (12) which apply only to occultations and transits and therefore figure here with their natural signs. Tables LIV, LV are alternative; the former applies to eclipses and occultations and represents the terms (4), (5) together; the latter applies to shadows and transits, and represents the terms (9), (10), (11). Finally, Table

## Introduction

LVI of which the arguments are Latitude and Variation represents the terms (2) or (8) no distinction being made between these. The formulæ would differ from one another by little more than a unit at maximum in the sixth place of decimals or say by 0.1 and it may be remarked here that for the satisfactory working of these tables fastidious accuracy in the last decimal place is not essential and may sometimes be relaxed without loss.

The expressions for Reduction to Middle are given on p. xx. Table LVII represents No. 1 with argument  $Q$ . The tabulation constants applied to render positive the other members of the group amounting to  $0^d 000461$  are subtracted from it. A portion of the equation of light amounting to  $\pm 0^d 000026$  is also applied here. Tables LVIII–LXIII represent the expressions numbered 2, 7, 6, 3, 4, 5 respectively, number 8 which applies with different values for occultations and transits and to these phenomena only is represented by Tables LXIV–LXV which are tables of double entry with argument  $Q, \gamma$  and must be applied with their natural signs. The sum of the equations for the Reduction must be corrected by adding to it its product by the Variation.

Table LXVI contains the corrections for Jupiter's phase which apply to shadows and transits and are shown on p. xxiii. The argument is the Annual Parallax  $p$  derived from Tables IV–V–VI. The equation in column 1 must be added to the semiduration as found in Tables L–LVI and the sum must be diminished by applying to it its product by the factor in column 3. Similarly the reduction drawn from Tables LVII–LXV must be modified by applying to it its product by the factor in column 5. The corrected semiduration and reduction apply to the phenomenon which is affected by phase only while for the opposite phenomenon the uncorrected values apply. The progress of an eclipse is calculated from Tables LXVII–LXIX. The first gives the standard light curve corresponding to diameter  $0' 796$  in terms of magnitude and the co-ordinate  $k$ . The second gives the relation between  $k$  and time for different values of the Latitude. The third a correction to the second due to the Variation.

## SATELLITE III

The general arrangement is the same as for Satellite I to which reference may be made for details which it is needless to repeat.

## APPROXIMATE TABLES OF CONJUNCTION

The arrangement is the same as that for Satellite I save only that the arguments  $\delta, \epsilon, \zeta, \eta$  are those so named on p. xviii and replace everywhere the two arguments that figured in Satellite I and the equation of Table III must be applied as a correction to the arguments  $\beta, \gamma$  as well as to the other entries of Table I.

## TABLES OF LONGITUDE, LATITUDE AND RADIUS VECTOR

These tables also follow closely the arrangement for Satellite I. The significance of the arguments A–V of Table XI is shown on p. xiv–xvi. The long period inequalities do not include for this Satellite the annual equation with argument  $G + \delta G$ . This equation has a separate argument  $\alpha$  but it may be noted that if we are calculating one of the phenomena with the help of the Approximate Tables  $\alpha$  has already been found and then column 16 of Table XI may be passed over. The corrections of the arguments for days elapsed from the beginning of the year are shown in Table XII. For all except the mean longitude the correction for the fraction of a day is made in the same table by means of an adding slip. For the mean longitude it is made by means of Table XIII. Tables XIV–XXXII give the

# Tables of the Four Great Satellites of Jupiter

equations of longitude which are recorded on p. xiv, each supplemented by a tabulation constant which is recorded at the foot of the table. The equations of Tables XXXIII–XXXVI taken together represent the formula of p. xv which represents  $2(r_3/a_3 - 1)$ . The four equations form a group, the tabulation constants of the last three being deducted from the first, which in consequence is always negative. Their sum is the so-called Variation, which appears again as argument of Tables XLVIII, L and elsewhere for converting mean motion into true. Tables XXXVII–XLII form a group which represents the expression of p. xvi, augmented by the sum of its tabulation constants, viz. by 1.00000. Their sum is the so-called Latitude, which reappears first as the argument of Table XLV, which shows the corresponding angle above Jupiter's orbit of the radius vector to the Satellite.

Tables XLIII, XLIV show corrections to be applied to the sum of the equations of Tables XXXVII–XLII for occultations, transits and shadows. Table XLIII is used as explained on p. xxvii. The Latitude, with or without these corrections as may be proper, is then used as argument in the Tables of the Phenomena for finding the semiduration of eclipse or other phenomenon, and the rate of progress of eclipse.

## TABLES OF THE PHENOMENA

The plan of these tables is generally the same as that for Satellite I, but there are certain differences. Tables XLVI, XLVII show the time taken to describe any given angle with the mean synodic motion, and the corresponding time with the true synodic motion is found by adding to this result its product by the Variation as taken from Tables XXXIII–XXXVI—the natural sign of the Variation being regarded. They are used like the corresponding tables of Satellites I, II, as explained on pp. xxvii, xxx, for finding the exact time of true conjunction from a comparison of the longitudes of Jupiter and the Satellite at an assumed approximate time. The correction, the so-called Complement, must be added, with its natural sign retained, to the approximate time, and also, for full accuracy, to the arguments O, S before these are used to derive the Latitude which is the argument of the following tables. When the exact time of true conjunction has been found, three quantities must be applied to it: the Reduction to the Middle of the phenomenon, the Semiduration of the phenomenon, and the Equation of Light. For the last of these, see Tables CIV, CV below. The second of them is contained in the group of tables XLVIII–LV, which represent the formulæ of p. xxii, together with the term of the equation of light (3) given on p. xxiv. Table XLIX *a*, *b*, represents in column 2 the leading term (1) of p. xxii, which is converted into (7) by the entry of column 4. The second portion, XLIX *b*, the argument of which is the latitude in its lower values from 0.450 to 1.550, is corrected by Table L, with arguments Latitude and Variation, for the terms (2) or (8) of p. xxii, just as the corresponding correction is made for Satellites I, II; but for higher latitudes this method is inexact, and in place of adding an equation to the semiduration, we correct the latitude as derived from Tables XXXVII–XLIV, before using it as argument in Table XLIX *a*, by the term  $\delta\zeta_3$  which is given on p. xxii. This Correction of High Latitudes is given in Table XLVIII. This difference of method for high and low latitudes involves a difference in the tabulation constants of Tables XLIX *a* and *b*, that of the former being  $-0^d.000100$  and of the latter  $-0^d.000500$ . Table LI represents the term (3) of p. xxii. This term is present only in eclipses and occultations. Table LII represents the term of the equation of light,  $+0^d.000007 (1 - \zeta_3^2)^{\frac{1}{2}} \sin D$  given on p. xxiv. This applies to all the phenomena. The arguments are the Latitude and  $\beta$ , which represents D. With the same arguments a term, (6) and (12) of p. xxii, is present in occultations and transits only. This is

## Introduction

given in Table LIII with a natural sign which must be regarded. The remaining terms of  $p_{xxii}$  (4) and (5) are given in Table LIV and (9) (10) (11) in Table LV. In the case of transits and shadows there are further equations depending on Jupiter's phase described below under Table LXV. The semiduration as corrected by these various equations must be added to or subtracted from the time of conjunction which has already been found according as we seek egress or ingress of the phenomenon.

The next group of equations—the Reductions to Middle—are given in Tables LVI–LXIV which represent the formulæ of  $p_{xx}$  together with the term which gives the correction (1) to the equation of light given on  $p_{xxiv}$ . This is included in Table LVI which as to its variable part represents the term (1) of  $p_{xx}$ . The sum of tabulation constants which make the remaining terms positive has been subtracted from this table and natural sign of the equation must be regarded. The terms 2–5 are represented by Tables LVII–LX, the terms 6–7 by Table LXII, the term 8 by Table LXI, and the term 9 by Tables LXIII–LXIV. Table LXIII applies to occultations only, Table LXIV to transits only, hence they are given with their natural signs. The sum of the equations of the reduction from Tables LVI to LXIV must be collected by its product by the Variation and for shadows and transits by Table LXV also, and the whole applied with its natural sign to the time of true conjunction already found.

Table LXV gives the corrections for Jupiter's phase which are enumerated on  $p_{xxiii}$ . These apply to shadows and transits only. The argument of the tables is the annual parallax of Jupiter  $p$  which is derived from the Approximate Tables IV–V–VI. The rule which governs the application of the equations according as  $p$  is positive or negative is given at the foot of the table. Column 1 of Table LXV must be applied subject to this rule directly to the semiduration drawn from Tables XLIX–LV, column 3 gives a factor which multiplied into the semiduration gives a final correction to be applied to it, and column 5 a corresponding factor to be multiplied into the reduction as drawn from Tables LVI–LXIV to get the correction for phase of this quantity. It will be noticed that for transits only ingress or only egress is affected by phase, the other phenomena following the rules already given and ignoring Table LXV. The same is true of shadow transits. Tables LXVI–LXVIII give the progress of an eclipse in accordance with the rules of  $pp_{xxiii}$ – $xxiv$ . With any given latitude Table LXVI gives a light curve which shows the rise of magnitude  $m$  with the progress of a quantity ( $k$ ) which is proportional to the time and which vanishes at half brightness. The rate at which ( $k$ ) varies with the time is found from Table LXVII in which the argument is Latitude, and Table LXVIII which corrects the last for the Variation.

### SATELLITE IV

There is no material variation at any point between the arrangements of the tables of Satellites III and IV.

The Approximate Tables represent the formulæ of  $pp_{xvii}$ – $xviii$  and are to be used in the same way as for Satellite III.

In the Tables of Longitude, Latitude and Radius Vector  $pp_{xiv}$ – $xvi$  give the designation of the arguments which figure in Tables IX–X.  $p_{xiv}$  shows also the values of the inequalities tabulated in Tables XII–XXV. The expressions on  $p_{xv}$  show the values of the entries of Tables XXVI–XXIX which together make up the Variation or  $2(r_4/a_4 - 1)$  and  $p_{xvi}$  shows the terms of Latitude which are given in Tables XXX–XXXVI. In the first of these tables with argument  $J$  i.e.  $h'''$  the term numbered 3 on  $p_{xvi}$  with argument  $h''' - 2\Delta$  has been included since the motion of  $2\Delta$  is so small over the period for which these tables run as to be

# Tables of the Four Great Satellites of Jupiter

here negligible. The sum of all the constants added in Tables XXX–XXXVI is 1.50000, so that the limits of eclipse,  $\zeta_4 = \pm 1$ , correspond respectively to latitudes 2.50000 and 0.50000. Table XXXVII represents the term of p. xx, applicable to occultations and transits, Table XXXVIII the correction of p. xxii for shadows and transits, and Table XXXIX the inclination of the radius vector of the Satellite to Jupiter's orbit, which corresponds to the sum of the equations given by Tables XXX–XXXVI.

In the Tables of the Phenomena which follow, Tables XL, XLI require no additional remark; they are to be used like the corresponding tables for the other Satellites. The next two tables follow the plan of the corresponding table of Satellite III, and are designed to avoid the imperfect convergence of the corrections (2), (4), (5), (8), (10), (11) of p. xxii to the semiduration as  $\zeta_4$  approaches the values + 1 or - 1. It is accomplished by omitting these terms and adding to  $\zeta_4$  a compensating correction. This method is used from  $\zeta_4 = \mp 1$  to  $\zeta_4 = \mp .55$ , *i.e.* from latitude 0.50 to 0.95, and from latitude 2.50 to 2.05. Table XLII represents the term (13) of p. xxii, with arguments Variation and Latitude; Table XLIII the terms (14), with arguments M, J, *i.e.*  $h_4'''$ ,  $h_6'''$ ; and Table XLIV the terms (14), (15) together; the former applying to eclipses and occultations only, the latter to shadows and transits. It will be noticed that the term (15) represents (9), which is not liable to any objection on the count of convergency, but as it runs with the same arguments as (10), (11) it is included in the same treatment with them, a course which presents no difficulties. The table of the main term of the semiduration which follows breaks into two portions, to correspond with the break in the treatment of  $\zeta_4$ . For latitudes between 0.50 and 0.95 and between 2.50 and 2.05, corrected by the equations of Tables XLII and XLIII or XLIV, Table XLV<sub>a</sub> gives the value of term (1) of p. xxii in column 2, and term (7) of the same page, by applying the correction of column 5. To this table no constant has been applied on account of the terms dealt with under Tables XLII–XLIV. Table XLV<sub>b</sub> is the continuation of the same table for the remaining range of latitude. It is to be used in conjunction with the tables which follow and represent the terms (2), (4), (5), (8)–(11) of p. xxii. Of these Table XLVI, with arguments Variation and Latitude, represents the term (2) or (8), which do not differ sensibly for the range of  $\zeta_4$  that occurs. This table may be considered as complementary to Table XLII, one or the other applying in every case, but XLII treating the term considered by a correction to  $\zeta_4$ , while XLVI treats it as an addition to the semiduration. Table XLVII, in the same way, is complementary to Table XLIII, and represents the terms (4), (5) of p. xxii, which apply to eclipses and occultations, while Table XLVIII, applying to shadows and transits, represents terms (9), (10), (11), which were dealt with in the other range of latitude by Table XLIV. Constants have been applied to render the equations of Tables XLVI–XLVIII positive, and their sum is of course removed from the entries of Table XLV<sub>b</sub>. Three small equations follow. Table XLIX represents the term (3) of p. xxii; this term appears only in eclipses and occultations, and so is given without added constant, and therefore with its natural sign. Table L represents the term arising from the equation of light which is given on p. xxiv, and Table LI the terms (6), (12) of p. xxii, which apply to occultations and transits only; the convergence of this last table becomes faulty at the limits of latitude, but not to a degree that can be considered important for these phenomena.

The tables which follow, LII–LX, give the Reduction to Middle for the several phenomena and represent the formulæ of p. xx. They require no special comment. To the first of them a constant portion of the equation of light has been added, in accordance with p. xxiv. Their sum will appear with a natural sign, which must be preserved, and is to be corrected by adding to it its product by the Variation.



## Introduction

The corrections for Jupiter's Phase which follows—Table LXI—is used as for the other Satellites but in this case the additional equation of semiduration is insensible as shown on p xxiii

The several elements of time of true conjunction reduction to middle semiduration and equation of light having been calculated the apparent time of each phenomenon is found as for the other Satellites

The tables of the phenomena conclude with tables specifying the rate of progress of an eclipse in agreement with the formulæ of pp xxiii xxiv With any latitude Table LXII gives a light curve which shows the rise of magnitude  $m$  with the progress of ( $k$ ) which is proportional to the time its motion per second being given by Table LXIII corrected by Table LXIV

### AUXILIARY TABLES

These tables are common to all the Satellites and have been almost sufficiently described incidentally A little repetition must be tolerated

Tables C CI are derived from Hill's *Tables of Jupiter* p 144 and give the reduction of Jupiter's ecliptic longitude to his orbit The formula is given above p xix In the same place the formula is given for Tables CII CIII which show how to reduce to Jupiter's orbit annual parallax computed upon the ecliptic

Table CIV shows the main part of the equation of light tabulated with the logarithm of Jupiter's true distance from the earth at the time of conjunction as argument The minor portions of the equation are enumerated on p xxiv of these (1) and (3) have been included in Tables XLV XLIII respectively for Satellite I and the corresponding tables for the other satellites Table CV gives the value of (2) The remaining tables hardly need description Table CVI shows the conversion of ' into decimals of a degree Table CVII makes the opposite conversion Tables CVIII CIX in the same way convert decimals of a day into  $^{\text{h}}$   $^{\text{m}}$  and back again

This completes the description of the tables it only remains to illustrate their use by examples

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# Tables of the Four Great Satellites of Jupiter

## EXAMPLES OF THE USE OF THE TABLES

The following examples illustrate the use of the tables for finding the longitude, latitude and radius vector of a Satellite at any given time, and also the times of ingress and egress of all the phenomena. The rate of progress of an eclipse is also calculated, as this is required for deducing from a set of photometric observations the instant of half-brightness.

In calculating the sequence of phenomena which occur in a single revolution of the Satellite—eclipse, occultation, shadow-transit, transit of disc,—the arguments may be derived from one another with only a single reference to the tables, but the equations belonging to these arguments must be taken out independently, since the periods are for the most part short and the equations go through large changes in short intervals of time, nor is it admissible to calculate, say, the eclipses, and then interpolate in some manner for the other phenomena. But it is legitimate, when a continuous sequence of eclipses, etc., is required, to calculate, say, for Satellite I every fourth eclipse only in full, and interpolate the eclipses intermediate between these, and similarly for the occultations and the other phenomena.

The tables of longitude recognise all inequalities of which I find the coefficient of longitude to amount to  $1''$  or over. This is equivalent in the times of the phenomena to the following amounts: for Satellite I  $0^s.12$ , for Satellite II  $0^s.24$ , for Satellite III  $0^s.48$ , for Satellite IV  $1^s.12$ . A rule of about the same rigour in point of time is applied to the equations which enter through the latitude. Hence while the tabulation runs for all four Satellites to  $0^d.000001$ , i.e., to  $0^s.0864$ , and is correctly made up to that point for all the terms properly included, it is by no means complete to that point for Satellite IV and even for Satellite III. It may be remembered then that for these two Satellites the last digit in tables of time cannot be insisted upon, and is to be regarded merely as a guard-figure; this will facilitate interpolations, especially in the tables of double entry.

Among the accessory quantities which are found with the help of the *Nautical Almanac*, the longitude of Jupiter ( $\lambda$ ) is given as reduced to Jupiter's orbit by Table CI, and referred to the *mean* equinox; the Sun's longitude ( $\odot$ ) is its *true* place, referred to the *mean* equinox; the annual parallax ( $p$ ) is reduced to Jupiter's orbit by Tables CII, CIII.

The longitude of the Satellite which is found is referred to Jupiter's orbit; the radius vector is for Jupiter's mean distance; the angle corresponding to the latitude is above Jupiter's orbit. The complement has been added as a correction to the arguments of latitude before the latitude was taken out.

## SATELLITE I

The examples calculated are the six phenomena:—1909 June 1, *Occultation Disappearance*; June 2, *Transit Ingress, Shadow Ingress, Transit Egress, Shadow Egress*; June 3, *Eclipse Re-appearance*. Incidentally they show how to find the longitude, latitude and radius vector, since the exact values of these are required at the approximate times of conjunction.

# Introduction

## SATELLITE I—APPROXIMATE CONJUNCTIONS 1909 JUNE 1 2 3

Superior Geoc			Inferior Geoc			Inferior Helio			Superior Helio		
Argu ments	Equations	Argu ments	Eq ations	Argu ments	Equations	Argu ments	Equations	Argu ments	Equations	Argu ments	Equations
I II (5667 4) 1670 5 $\alpha$ 152 1822 7	IV — 0641 V 91 VI 23	$\alpha$ 1823 6	IV — 0640 V 91 VI 23	18 3 6	IV V <i>Ibid</i> VI	$\alpha$ 1824 5	IV V VI		IV V VI		
I II (601 12) 341 64 $\beta$ 15 21 94 97	$p$ — 0527	$\beta$ 95 85	$p$ — 0526	$\beta$ 95 85	$p$ — 0526	$\beta$ 96 72					
I II (634 7) 363 5 $\gamma$ 152 2 150 4		$\gamma$ 151 3		$\gamma$ 151 3		$\gamma$					
I II III $p$ (8 37) 1760 613 42 $\delta$ — 53 0599	I 0680 II 12080 III 423 $p$ — 527 VII 11 VIII 4	$\delta$ 1484	I } 21609 II } III 423 $p$ — 526 VII 49 VIII 5	$\delta$ 1537	I } 21609 II } III 423 $p$ VII 46 VIII 5	$\delta$ 0659	I } 30458 II } III 422 $p$ VII 14 VIII 5				
I II III $p$ (8 23) 93 6 4 $\epsilon$ — 5 098	June 12671	$\epsilon$ 009	June 21560	$\epsilon$ 014	June 22083	$\epsilon$ 103	June 30899				

The numbers in ( ) are the complements of the periods of the arguments thus for argument  $\beta$  in place of subtracting  $398^1 88$  we add  $601^d 12$  when it is necessary. The arguments for Inferior Geocentric Conjunction are got from those for Superior Geocentric Conjunction by adding  $0^d 8849$  to each and do not involve a fresh reference to the tables similarly those for Superior Heliocentric are derived from Inferior Heliocentric the latter are the same as for Inferior Geocentric except that in  $\delta$   $\epsilon$  the parallax  $p$  ( $-0^d 053$ ) which was applied must be removed.

### ACCESSORY QUANTITIES DRAWN MAINLY FROM *Nautical Almanac*

Table C	$\Omega$	99 32 4	99 32 4		
	$\odot$	70 35 30 5	71 26 34 1		
	log R	006169	006224		
	log $\Delta$	733410	734528		
	$z$	166 42 24 3	166 46 28 6	166 46 43 0	166 50 45 3
	$p$	-10 44 17 9	-10 43 35 7		
	To compare with Sat	155 96844	156 04803	166 77861	166 84592
XXXV	$\oplus$ Jovic Lat	-01299	-01260		

# Tables of the Four Great Satellites of Jupiter

## SATELLITE I—LONGITUDE, LATITUDE AND RADIUS VECTOR

1909			June 1 <sup>st</sup> 267100			June 2 <sup>nd</sup> 156000			June 2 <sup>nd</sup> 208300			June 3 <sup>rd</sup> 089900			
Arguments		Longitude		Arguments		Longitude		Arguments		Longitude		Arguments		Longitude	
IX X	(6.47454) 1.68954 67217 2.36171	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	A 3°25061	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	A 3°30291	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	A 0°65905	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(7.650) 1°102 1°847 0°599	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	B 1°488	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	B 1°540	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	B 2°422	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(8.229) 0°325 1°773 0°327	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	C 1°216	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	C 1°268	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	C 0°379	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(8.231) 0°626 1°885 0°742	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	D 1°631	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	D 1°683	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	D 0°796	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(8.231) 0°990 1°889 1°110	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	E 1°999	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	E 0°282	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	E 1°164	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(598.84) 110°31 152°27 262°58	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	F 263°47	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	F 263°52	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	F 264°40	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(542.33) 32°46 152°27 184°73	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	G 185°62	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	G 185°67	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	G 186°55	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(517.70) 50°46 152°27 202°73	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	H 203°62	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	H 203°67	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	H 204°55	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(514.41) 436°53 152°27 103°21	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	I 104°10	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	I 104°15	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	I 105°03	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	J 1909°417	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	J 1909°420	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	J 1909°420	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	J 1909°422	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(8.23086) 85876 1°89039 0°98001	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	K -10 1°86891	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	K +10 1°92121	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	K +9 1°03367	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(8.232) 875 1°989 1°096	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	L 1°985	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	L 0°269	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	L 1°151	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(8.231) 1°513 1°914 1°658	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	M 0°778	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	M 0°830	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	M 1°712	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 17°30483 16°27912 2°01454 8095 327 1119 632 40 1405 617 1416 746 444 3338 77 61			
IX X	(8.23) 0°98 1°90 1°11	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 330°32685 52°90714 1°44477 88068 120 1089 706 63 1394 625 1435 744 444 4366 84 50	N 2°00	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 30°52335 1°22093 8726 542 109 298 339 1400 621 1425 745 444 4267 83 52	N 0°28	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31800 173°81584 40°69780 1°68896 14234 551 79 371 360 1400 621 1425 745 444 3296 76 61	N 1°16	IX X XI { XII XIII XIV XV XVI XVII XVIII XIX XX XXI XXII XXIII XXIV	130°31			

# Introduction

SATELLITE I—PHENOMENA 1909 JUNE 1 2 3

Occult tion Dis

Transit Ing and Eg

Shadow Ing and Eg

Eclipse Re

Semidurations				
XL	<sup>d</sup> 0 047261	<sup>d</sup> 0 047179	<sup>d</sup> 0 046844	<sup>d</sup> 0 046924
XLI	45	9	15	46
XLII	— 3			— 3
XLIII	10	10	10	10
XLIV	354	144	118	384
	<u>0 047667</u>	<u>0 04734</u> Eg	<u>0 046987</u> Ing	<u>0 047361</u>
LI		15 —846 <u>0 046511</u> Ing	15 —840 <u>0 046162</u> Eg	
Reductions to Middle				
XLV	—0 000284	—0 000408	—0 000530	—0 000384
XLVI	—29			
XLVII		—37		
XLVIII	62	7	10	58
XLIX	4	4	3	3
L	5	5	6	6
Var	—1	2	3	—2
	<u>—0 000243</u>	<u>—0 000427</u> Eg	<u>—0 000508</u> Ing	<u>—0 000319</u>
LI		+16 <u>—0 000411</u> Ing	+19 <u>—0 000489</u> Eg	
Apparent Times of the Phenomena				
CIV CV	<sup>d</sup> 0 031237	<sup>d</sup> 0 031317	<sup>d</sup> 0 031322	
Approx	1 267100	2 156000	2 208300	
Comp	— 99	— 101	104	
Semidur	—47667	—46511	—46987	
Reduction	— 243	— 411	— 508	
	<u>—48009</u> ←	<u>—47023</u> ←	<u>—47495</u> ←	
	June 1 250328	June 2 140294	June 2 192231	
CIV CV		0 031317	0 031322	<sup>d</sup> 0 031401
Approx		2 156000	2 208300	3 089900
Comp		— 101	104	85
Semidur		47342	46162	47361
Reduction	←	— 427	— 489	—319
		<u>—528</u> ←	<u>— 489</u> ←	<u>—319</u> ←
		June 2 234131	June 2 285399	June 3 168428
CVIII	<sup>d h m</sup> Oc Dis June 1 6 0 28 3	<sup>d h m</sup> Tr Ing June 2 3 22 1 4	<sup>d h m</sup> Sh Ing June 2 4 36 48 8	<sup>d h m</sup> Ecl Re June 3 4 2 32 2
LIII LIV		Eg 5 37 8 9	Eg 6 50 58 5	Δt per sec —0450

# Tables of the Four Great Satellites of Jupiter

## SATELLITE II

The phenomena calculated are the following:—1892 Sep. 6, Eclipse Disappearance; Sep. 8, Shadow Ingress, Transit Ingress, Shadow Egress, Transit Egress; Sep. 10, Occultation Reappearance.

Superior Helioc.			Inferior Helioc.			Inferior Geoc.			Superior Geoc.		
Arguments			Equations			Arguments			Equations		
I	(5667.4)		IV	„		IV	+	305	IV	+	274
II	4128.9	$\alpha$	V	„	$\alpha$	V		241	V		240
	248.8	4377.7	VI	„	4379.5	VI		138	VI		139
I	(601.12)		$p$	„		$p$	+	.0684	$p$	+	.0653
II	117.70	$\beta$			$\beta$						
	248.79	366.49			368.27						
I	(634.7)										
II	0.5	$\gamma$			$\gamma$						
	248.8	249.3			251.1						
I	(6.475)										
II	1.090										
III	2.004	$\delta$	I	1.8046	$\delta$	I	3.5816		I	5.3587	
$p$	.084	3.178	II	4.7866	1.430	II	4.7866		II	4.7866	
			III	838		III	840		III	841	
I	(6.45)		$p$	„		$p$	+	684	$p$	+	653
II	0.32		VII	212		VII		102	VII		196
III	.20	$\epsilon$	VIII	53		VIII		53	VIII		52
$p$	.08				$\epsilon$						
	0.60		Sept.	6.7015	2.38	Sept.	8.4666	2.45	Sept.	10.3195	

## ACCESSORY QUANTITIES

Table C	$\Omega$	99° 22'.2	99° 22'.2	99° 22'.2	99° 22'.2
	$\odot$	„	„	166° 47' 5''.9	168° 31' 10''.5
	$\log R_i$	„	„	.002878	.002678
	$\log \Delta$	.615489	.613759	.613692	.612015
	$z$	16° 37' 25''.7	16° 47' 8''.7	16° 47' 31''.6	16° 57' 20''.8
	$p$	„	„	+7° 2' 24''.4	+6° 43' 28''.5
	To compare with Sat. }	16°.62380	16°.78575	23°.83222	23°.68036
XLV	$\oplus$ Jovic. Lat.	„	„	+05180	+05261

# Introduction

## SATELLITE II—LONGITUDE LATITUDE AND RADIUS VECTOR

89

S pt mb 67 5

S pt mb 84666

S pt b 8536

S pt mb 395

A g t		L g t d		A g m t	L g t d		A g t	L g t d		A g t	L g t d		A g t	L g t d	
IX	( 949 7)	IX	6 87	A	IX	6 87	IX	6 87	IX	6 87	IX	16 87	A	IX	16 87
X	7936	X	43 69 4	A	X	346 43994	X	346 43994	X	346 43994	X	189 8946	A	X	189 8946
IX	3 9 9 5 67 65	XI {	7 96 33	4 68	XI {	46 63 39	4963	XI {	53 7 862	3 797	XI {	3 4 6 8	B	XI {	3 4 6 8
IX	(5 49)	XII	5 6	B	XII	669 7	B	XII	6 8 5	B	XII	963 6	B	XII	963 6
X	3 99	XIII	46 9	3 54	XIII	1 65934	3 9	XIII	1 5454	8	XIII	6 7 4	C	XIII	6 7 4
IX	59	XIV	64	C	XIV	7	C	XIV	99	C	XIV	313	C	XIV	313
IX	(6 44)	XV	43	3 49	XV	769	3 55	XV	1695	78	XV	67	D	XV	67
X	3 55	XVI	6496	D	XVI	744	D	XVI	5 69	D	XVI	9 6	D	XVI	9 6
IX	73	XVII	964	39	XVII	3	3 9	XVII	17 7	3 09	XVII	679	E	XVII	679
IX	(6 447)	XVIII	736	L	XVIII	17 8	E	XVIII	66	E	XVIII	83	F	XVIII	83
X	3	XIX	48	3 96	XIX	65	F	XIX	895	46	XIX	8948	G	XIX	8948
IX	4	XX	8955	F	XX	895	G	XX	3 9	G	XX	3 57	H	XX	3 57
IX	(6 4486)	XXI	3	G	XXI	3 8	H	XXI	3 9	H	XXI	58	I	XXI	58
X	994	XXII	5	I	XXII	5	I	XXII	57	I	XXII	6	J	XXII	6
IX	9	XXIII	37	J	XXIII	9	J	XXIII	379	J	XXIII	6	K	XXIII	6
IX	5445	XXIV	36	3 7 8	XXIV	368	K	XXIV	8	K	XXIV	57	L	XXIV	57
IX	(6 449)	XXV	74	K	XXV	1 9	L	XXV	8	L	XXV	63	M	XXV	63
X	4 5	XXVI	61	87	XXVI	355	M	XXVI	355	M	XXVI	3546	N	XXVI	3546
IX	5	XXVII	3555	7 3	XXVII	8	N	XXVII	441	N	XXVII	15 4	O	XXVII	15 4
IX	(598 84)	XXVIII	96	H	XXVIII	8	O	XXVIII	91	O	XXVIII	8	P	XXVIII	8
X	319 8	XXIX	4	57	XXIX	14	P	XXIX	7	P	XXIX	4	Q	XXIX	4
IX	5 7	XXX	6	I	XXX	6	Q	XXX	5	Q	XXX	79	R	XXX	79
IX	(54 33)	XXXI	57	363 85	XXXI	5	R	XXXI	3 74 63	365 7	XXXI	3 687 8	S	XXXI	3 687 8
X	3 9	XXXII	5	J	XXXII	5	S	XXXII	3 8 93	3 8 93	XXXII	69	T	XXXII	69
IX	5 7			K			T		9 59	9 59			U		
IX	(5 77)			87			U		009 4	009 4			V		
X	38			XLVIII			V		+15	+15			XLVIII		
IX	5 7			V									V		
IX	(5 44)														
X	54 6														
IX	5 7														
IX	(8 3)														
X	63														
IX	4														
IX	(6 5)														
X	4														
IX	(6 500)														
IX	8														
IX	(6 5)														
X	3 6														
IX	(6 4)														
IX	5														
X	3 46														
IX	(8 47)														
X	69 3														
IX	59														
IX	(8 4)														
X	38														
IX	8														
IX	(8)														
X	76														
IX	(6 44997)														
X	345 7														
IX	99 8 3 544 5														
IX	(6 5)														
X	4														
IX	(6 449)														
X	79														
IX	37														
IX	(6 45)														
X	48														
IX	(6 5)														
X	7														
IX	(6 4)														
IX	1 3														
X	7														

# Tables of the Four Great Satellites of Jupiter

SATELLITE II—PHENOMENA, 1892 SEPTEMBER 6, 8, 10

Eclipse, Dis.

Shadow, Ing. and Eg.

Transit, Ing. and Eg.

Occultation, Re.

Semidurations				
L	<sup>d</sup> 0.052414	<sup>d</sup> 0.052487	<sup>d</sup> 0.049121	<sup>d</sup> 0.049060
LI	+7	”	”	+7
LII	7	7	7	8
LIII	”	”	—11	11
LIV	69	”	”	68
LV	”	54	58	”
LVI	333	935	854	402
	<u>0.052830</u>	<u>0.053483</u> Eg.	<u>0.050029</u> Ing.	<u>0.049556</u>
LXVI		+2 } —395 }	+2 —369	
		<u>0.053090</u> Ing.	<u>0.049662</u> Eg.	
Reductions to Middle				
LVII	<sup>d</sup> —0.001118	<sup>d</sup> —0.001397	<sup>d</sup> —0.001238	<sup>d</sup> —0.000994
LVIII	91	64	32	67
LIX	26	94	88	34
LX	3	37	37	3
LXI	6	4	5	7
LXII	7	7	6	6
LXIII	31	31	26	26
LXIV	”	”	”	—47
LXV	”	”	—62	”
Var.	+15	—19	—19	+16
	<u>—0.000939</u>	<u>—0.001179</u> Eg.	<u>—0.001125</u> Ing.	<u>—0.000882</u>
LXVI	”	+17	+16	
		<u>—0.001162</u> Ing.	<u>—0.001109</u> Eg.	
Apparent Times of the Phenomena				
CIV, CV Approx. Comp. Semidur. Reduction	<sup>d</sup> 0.023805 6.701500 —1240 —52830 —939 <u>—55009</u> ← 6.670296	<sup>d</sup> 0.023710 8.466600 —311 —53090 —1162 <u>—54563</u> ← 8.435747	<sup>d</sup> 0.023706 8.536100 919 —50029 —1125 <u>—51154</u> ← 8.509571	
CIV, CV Approx. Comp. Semidur. Reduction		<sup>d</sup> 0.023710 8.466600 —311 53483 —1179 <u>—1490</u> ← 8.542303	<sup>d</sup> 0.023706 8.536100 919 49662 —1109 <u>—1109</u> ← 8.609278	<sup>d</sup> 0.023615 10.319500 —67 49556 —882 <u>—949</u> ← 10.391722
CVIII LXVIII, } LXIX }	Ecl. Dis. Sept. <sup>d h m s</sup> 6 16 5 13.6 $\Delta k$ per 1 <sup>s</sup> +.0200	Sh. I. Sept. <sup>d h m s</sup> 8 10 27 28.5 Sh. E. 8 13 0 55.0	Tr. I. Sept. <sup>d h m s</sup> 8 12 13 46.9 Tr. E. 8 14 37 21.6	Oc. R. Sept. <sup>d h m s</sup> 10 9 24 4.8

# Introduction

## SATELLITE III

The following phenomena are calculated together with the places of the Satellite that are necessary for this purpose — 1910 March 31 Eclipse Disappearance and Reappearance April 3 Shadow Ingress and Egress Transit Ingress and Egress The Occultation which takes place on March 31 is also calculated but it is invisible since both phases occur while the Eclipse is in progress

Superior Hel oc			Superior Geoc			Inferior Hel oc			Inferior Geoc		
Arg ments	Equations	Argu ments	Equations	Argu ments	Equations	Argu ments	Equations	Argu ments	Eq ations		
I II III $\alpha$ 2039 7 86 0 2125 7	IV V VI	$\alpha$ 2125 7	IV V VI $\alpha$ —0°0359 312 13	$\alpha$ 2129 3	IV V VI $\alpha$ —0°0507 318 12	$\alpha$ 2129 3	IV V VI $\alpha$ —0°0512 318 12	$\alpha$ 2129 3	IV V VI $\alpha$ —0°0512 318 12		
I II III $\beta$ (601 12) 311 78 86 00 13 397 91	$p$	$\beta$ 397 91	$p$ —0°0034	$\beta$ 2 61	$p$ —0°0177	$\beta$ 2 61	$p$ —0°0182	$\beta$ 2 61	$p$ —0°0182		
I II III $\gamma$ (634 7) 2 0 86 0 1 88 1		$\gamma$ 88 1		$\gamma$ 91 7		$\gamma$ 91 7		$\gamma$ 91 7			
I II III $\delta$ (2 95) 2 41 1 39 13 3 93		$\delta$ 3 93		$\delta$ 7 51		$\delta$ 7 51		$\delta$ 7 51 $p$ — 02			
I II III $\epsilon$ (2 84) 3 38 13 13 3 64		$\epsilon$ 3 64		$\epsilon$ 7 22		$\epsilon$ 7 22		$\epsilon$ 7 22 $p$ — 02			
I II III $\zeta$ (2 85) 4 88 14 13 5 15	I II III $p$ VII VIII IX X 4 1261 26 9966 1260 16 42 34 28	$\zeta$ 5 15	I II III $p$ VII VIII IX X 4 1261 26 9966 1260 34 16 42 34 28	$\zeta$ 8 73	I II III $p$ VII VIII IX X 7 7093 26 9966 0 1255 24 38 6 28	$\zeta$ 8 73	I II III $p$ VII VIII IX X 7 7093 26 9966 0 1255 24 38 6 28	$\zeta$ 8 73	I II III $p$ VII VIII IX X 7 7093 26 9966 0 1255 24 38 6 28		
I II III $\eta$ (2 85) 4 36 14 13 4 63	I II III $p$ VII VIII IX X 4 1261 26 9966 1260 16 42 34 28	$\eta$ 4 63	I II III $p$ VII VIII IX X 4 1261 26 9966 1260 34 16 42 34 28	$\eta$ 8 21	I II III $p$ VII VIII IX X 7 7093 26 9966 0 1255 24 38 6 28	$\eta$ 8 21	I II III $p$ VII VIII IX X 7 7093 26 9966 0 1255 24 38 6 28	$\eta$ 8 21	I II III $p$ VII VIII IX X 7 7093 26 9966 0 1255 24 38 6 28		
Mar 31 2607		Mar 31 2573		April 3 8410		April 3 8229					

Nt —Th d t t pply th q t fT bl III t th t f m l 6 fT bl I h w b h b d t lly mtt d f mth f t fp 14

## ACCESSORY QUANTITIES

C	8 0 log R log $\Delta$ 2 $p$ To compare with Sat XLIII $\oplus$ Jovic Lat	99 32 8 0 648767 189 41 43 8 189 69550	99 32 8 10 9 22 5 9 999714 0 648767 189 41 42 9 —0 6 12 7 189 59172 —0 08210	99 32 8 0 648919 189 57 58 0 189 96611	99 32 8 13 40 16 1 0 000171 0 648918 189 57 53 1 —0 49 55 1 189 13278 —0 08195
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# Tables of the Four Great Satellites of Jupiter

## SATELLITE III—LONGITUDE, LATITUDE AND RADIUS VECTOR

1910

March 31<sup>st</sup> 260700

March 31<sup>st</sup> 257300

April 3<sup>rd</sup> 841000

April 3<sup>rd</sup> 822900

Arguments		Longitude		Argu-ments	Longitude		Argu-ments	Longitude		Argu-ments	Longitude	
XI XII	(2 <sup>9</sup> 4907) 5 <sup>3</sup> 2952 A 5 <sup>6</sup> 4957 3 <sup>9</sup> 2816	XI XII XIII {	327°60053 208°58817 13°08259	A 3 <sup>9</sup> 2476	XI XII XIII {	327°60053 208°58817 12°57941	A 0°45753	XI XII XIII {	327°60053 359°54110 42°26682	A 0°43943	XI XII XIII {	327°60053 359°54110 41°26047
XI XII	(87 <sup>4</sup> 77) 5 <sup>4</sup> 426 B 2 <sup>5</sup> 598 8 <sup>0</sup> 24	XIV XV XVI XVII	3522 9449 3719 48	B 8 <sup>0</sup> 21	XIV XV XVI XVII	9430 3719 48 19117	B 11 <sup>6</sup> 04	XIV XV XVI XVII	5032 4060 892 52	B 11 <sup>5</sup> 87	XIV XV XVI XVII	4167 880 52 20701
XI XII	(2 <sup>8</sup> 4) 6 <sup>3</sup> 35 C 4 <sup>3</sup> 32 3 <sup>5</sup> 1	XVIII XIX XX XXI	749 149 28 101	C 3 <sup>5</sup> 1	XVIII XIX XX XXI	752 149 28 101	C 7 <sup>0</sup> 9	XVIII XIX XX XXI	15257 46 69 99	C 7 <sup>0</sup> 7	XVIII XIX XX XXI	15234 47 70 98
XI XII	(2 <sup>8</sup> 445) 6 <sup>4</sup> 003 D 4 <sup>3</sup> 943 3 <sup>6</sup> 391	XXII XXIII XXIV XXV	925 31 267 902	D 3 <sup>6</sup> 357	XXII XXIII XXIV XXV	925 31 267 902	D 0°0639	XXII XXIII XXIV XXV	1145 32 253 932	D 0°0458	XXII XXIII XXIV XXV	1144 32 253 932
XI XII	(2 <sup>8</sup> 452) 0 <sup>7</sup> 529 E 4 <sup>4</sup> 029 5 <sup>1</sup> 558	XXVI XXVII XXVIII	50 1326 1009	E 5 <sup>1</sup> 524	XXVI XXVII XXVIII	51 1326 1009	E 1 <sup>5</sup> 5813	XXVI XXVII XXVIII	57 1333 1005	E 1 <sup>5</sup> 5632	XXVI XXVII XXVIII	56 1333 1005
XI XII	(3 <sup>0</sup> 5) 4 <sup>2</sup> 29 F 6 <sup>8</sup> 7 4 <sup>2</sup> 1	XXIX XXX XXXI XXXII	208 7 223 16	F 4 <sup>2</sup> 1	XXIX XXX XXXI XXXII	201 7 222 16	F 0°84	XXIX XXX XXXI XXXII	215 7 225 16	F 0°82	XXIX XXX XXXI XXXII	178 8 216 17
XI XII	(3 <sup>0</sup> 5) 2 <sup>8</sup> 2 G 6 <sup>8</sup> 6 2 <sup>7</sup> 3	189°068924		G 2 <sup>7</sup> 3	189°051844		G 6 <sup>3</sup> 1	9°092550		G 6 <sup>2</sup> 9	9°01225	
XI XII	(2 <sup>8</sup> 2) 6 <sup>6</sup> 2 H 4 <sup>1</sup> 3 3 <sup>5</sup> 7			H 3 <sup>5</sup> 7			H 7 <sup>1</sup> 5			H 7 <sup>1</sup> 3		
XI XII	(49 <sup>8</sup> 4) 38 <sup>1</sup> 8 I 40 <sup>1</sup> 10 28 <sup>1</sup> 2	Comp <sup>t</sup> . XLVI Var <sup>n</sup> .	+0°00626 +0°000124 ,,	I 28 <sup>1</sup> 2	Comp <sup>t</sup> . XLVI Var <sup>n</sup> .	+0°07328 +0°001459 +3	I 31 <sup>7</sup> 0	Comp <sup>t</sup> . XLVI Var <sup>n</sup> .	+0°04061 +0°000808 -2	I 31 <sup>6</sup> 8	Comp <sup>t</sup> . XLVI Var <sup>n</sup> .	+0°12053 +0°002400 -5
XI XII	(599) 74 J 90 164			J 164			J 168			J 168		
XI XII	(542 <sup>3</sup> 3) 397 <sup>4</sup> 6 K 90 <sup>2</sup> 6 30 <sup>0</sup> 5	Variation		K 30 <sup>0</sup> 5	Variation		K 33 <sup>6</sup> 3	Variation		K 33 <sup>6</sup> 1	Variation	
XI XII	(517 <sup>7</sup> 0) 415 <sup>4</sup> 6 L 90 <sup>2</sup> 6 23 <sup>4</sup> 2	XXXIII XXXIV XXXV XXXVI	-0°0616 41 623 164	L 23 <sup>4</sup> 2	XXXIII XXXIV XXXV XXXVI	-0°0616 41 623 164	L 27 <sup>0</sup> 0	XXXIII XXXIV XXXV XXXVI	-0°0382 27 17 117	L 26 <sup>9</sup> 8	XXXIII XXXIV XXXV XXXVI	-0°0381 27 17 115
XI XII	(514 <sup>4</sup> 1) 315 <sup>9</sup> 4 M 90 <sup>2</sup> 6 406 <sup>2</sup> 0			M 406 <sup>2</sup> 0			M 409 <sup>7</sup> 8			M 409 <sup>7</sup> 6		
XI XII	(566 <sup>7</sup> 4) 2035 <sup>4</sup> a 90 <sup>3</sup> 2125 <sup>7</sup>	+0°0212		a 2125 <sup>7</sup>	+0°0212		a 2129 <sup>3</sup>	-0°0221		a 2129 <sup>3</sup>	-0°0222	
XI XII	N 1910 <sup>2</sup>	Rad. Vec.	283 <sup>''</sup> 99	N 1910 <sup>2</sup>	Rad. Vec.	283 <sup>''</sup> 99	N 1910 <sup>3</sup>	Rad. Vec.	283 <sup>''</sup> 38	N 1910 <sup>3</sup>	Rad. Vec.	283 <sup>''</sup> 38
XI XII	(2 <sup>8</sup> 4545) 0 <sup>2</sup> 3627 +12 4 <sup>4</sup> 0607 4 <sup>6</sup> 4234			O +146 4 <sup>6</sup> 3894			O +81 1 <sup>0</sup> 6809			O +239 1 <sup>0</sup> 4999		
XI XII	(6 <sup>4</sup> 2) 1 <sup>6</sup> 8 P 0 <sup>8</sup> 6 2 <sup>5</sup> 4	Latitude		P 2 <sup>5</sup> 4	Latitude		P 2 <sup>5</sup> 4	Latitude		P 2 <sup>5</sup> 2	Latitude	
XI XII	(6 <sup>4</sup> 23) 0 <sup>4</sup> 44 Q 0 <sup>8</sup> 35 1 <sup>2</sup> 79	XXXVII XXXVIII XXXIX XL	0°22133 3183 735 846	Q +1 1 <sup>2</sup> 76	XXXVII XXXVIII XXXIX XL	0°22223 3185 735 849	Q +1 1 <sup>2</sup> 82	XXXVII XXXVIII XXXIX XL	1°58032 1°2822 1067 1156	Q +2 1 <sup>2</sup> 65	XXXVII XXXVIII XXXIX XL	1°57300 1°2803 1059 1143
XI XII	(6 <sup>4</sup> 2) 3 <sup>3</sup> 7 R 0 <sup>8</sup> 3 0 <sup>6</sup> 2	XLI XLII XLIII XLIV	119 20 ,, ,,	R 0 <sup>6</sup> 2	XLI XLII XLIII XLIV	119 20 -8210 ,,	R 0 <sup>6</sup> 2	XLI XLII XLIII XLIV	41 20 ,, +201	R 0 <sup>6</sup> 0	XLI XLII XLIII XLIV	41 20 +8195 +199
XI XII	(2 <sup>8</sup> 464) 0 <sup>6</sup> 527 +1 4 <sup>4</sup> 180 5 <sup>0</sup> 707			S +15 5 <sup>0</sup> 673			S +8 1 <sup>4</sup> 974			S +24 1 <sup>4</sup> 793		
XI XII	(2 <sup>8</sup> 5) 3 <sup>1</sup> 2 T 4 <sup>4</sup> 6 0 <sup>4</sup> 3	XLVIII	0°27036 -10	T 0 <sup>4</sup> 3	XLVIII	0°18921 -41	T 4 <sup>0</sup> 1	XLVIII	1°73339 -10	T 3 <sup>9</sup> 9	XLVIII	1°80760 -41
XI XII	(2 <sup>8</sup> 46) 6 <sup>5</sup> 02 U 4 <sup>4</sup> 09 3 <sup>7</sup> 57	0°27026		U +1 3 <sup>7</sup> 54	0°18880		U +1 0 <sup>1</sup> 83	1°73329		U +2 0 <sup>1</sup> 66	1°80719	
XI XII	(2 <sup>8</sup> ) 5 <sup>6</sup> V 4 <sup>2</sup> 2 <sup>6</sup>	XLV	-2°0606	V 2 <sup>6</sup>	XLV	-2°0602	V 6 <sup>2</sup>	XLV	+2°06158	V 6 <sup>2</sup>	XLV	+2°05882

# Introduction

## SATELLITE III—PHENOMENA 1910 MARCH 31 APRIL 3

Eclipse Dis and Re

Occultation Dis and Re

Shadow Ing and Eg

Transit Ing and Eg

Semidurations				
XLIX	<sup>d</sup> 0052042	<sup>d</sup> 0044495	<sup>d</sup> 0051610	<sup>d</sup> 0044793
L				
LI	—17	—17		
LII	10	10	10	10
LIII		34		—34
LIV	130	130		
LV			114	113
	<u>0052165</u>	<u>0044652</u>	<u>0051734</u> Ing	<u>0044882</u> Eg
LXV			0	0
			—6	—5
			<u>0051728</u> Eg	<u>0044877</u> Ing
Reductions to Middle				
LVI	<sup>d</sup> —0001856	<sup>d</sup> —0001859	<sup>d</sup> —0002395	<sup>d</sup> —0002411
LVII	2	2	2	2
LVIII	134	133	113	108
LIX	15	15	10	11
LX	5	5	6	5
LXI	10	10	11	11
LXII	26	26	14	14
LXIII		—157		—207
LXIV				+5
Var	—3	—4	+5	
	<u>—0001667</u>	<u>—0001829</u>	<u>—00034</u> Ing	<u>—000462</u> Eg
LXV			<u>—0002234</u> Eg	<u>—0002462</u> Ing
Apparent Times of the Phenomena				
CIV CV	<sup>d</sup> 0025702	<sup>d</sup> 0025702	<sup>d</sup> 0025711	<sup>d</sup> 0025711
Approx	Mar 31 260700	Mar 31 257300	Apr 3 841000	Apr 3 822900
Comp	124	1462	806	2395
Semidur	—52165	—44652	—51734	—44877
Reduction	—1667	—1829	—2234	—2462
	<u>—53832</u> ←	<u>—46481</u> ←	<u>—53968</u> ←	<u>—47339</u> ←
	Mar 31 232694	Mar 31 237983	Apr 3 813549	Apr 3 803667
CIV CV	<sup>d</sup> 0025702	<sup>d</sup> 0025702	<sup>d</sup> 0025711	<sup>d</sup> 0025711
Approx	Mar 31 260700	Mar 31 257300	Apr 3 841000	Apr 3 822900
Comp	124	1462	806	2395
Semidur	52165	44652	51728	44882
Reduction	—1667	—1829	—2234	—2462
	<u>—1667</u> ←	<u>—1829</u> ←	<u>—2234</u> ←	<u>—2462</u> ←
	Mar 31 337024	Mar 31 327287	Apr 3 917011	Apr 3 893426
CVIII	Ecl Dis Mar 31 5 35 48	Occ Dis Mar 31 5 42 41 7	Sh Ing Apr 3 19 31 30 6	Tr Ing Apr 3 19 17 16 8
LXVII	Re 8 5 18 9	Re 7 5 1 17 6	Eg 22 0 29 8	Eg 21 26 32 0
LXVIII	Δ(k) per 1 ± 00748			

# Tables of the Four Great Satellites of Jupiter

## SATELLITE IV

The phenomena calculated below are, 1886 April 30, Eclipse and Occultation, followed by May 8, Shadow and Transit. All these phenomena are very near the limits. The occultation reappearance takes place before the eclipse begins, so that the complete set of phenomena would be visible. In the course of the calculation the places of the Satellite are found.

Superior Helioc.			Superior Geoc.			Inferior Helioc.			Inferior Geoc.		
Arguments	Equations		Arguments	Equations		Arguments	Equations		Arguments	Equations	
I (5667.4) 1939.5 $\alpha$ II 117.3 2056.8	IV V VI	” ” ”	$\alpha$ 2056.8	IV— V VI	$\alpha$ 0.4545 968 132	$\alpha$ 2065.2	IV— V VI	$\alpha$ 0.5069 980 151	$\alpha$ 2065.2	IV— V VI	$\alpha$ 0.5069 980 151
I (601.12) 321.15 II 117.27 $\beta$ III .34 39.88	$p$ ”		$\beta$ 39.88	$p$ — 0.3445		$\beta$ 48.26	$p$ — 0.3938		$\beta$ 48.26	$p$ — 0.3938	
I (634.7) 2.1 II 117.3 $\gamma$ III .3 119.7			$\gamma$ 119.7			$\gamma$ 128.1			$\gamma$ 128.1		
I (83.310) 11.755 II .442 III .339 $\delta$ $p$ ” 12.536			$\delta$ 12.536 $p$ — .345 12.191			$\delta$ 4.220			$\delta$ 4.220 $p$ — .394 3.826		
I (83.31) 9.79 II .45 III .34 $\epsilon$ $p$ ” 10.58			$\epsilon$ 10.58 $p$ — .34 10.24			$\epsilon$ 18.96			$\epsilon$ 18.96 $p$ — .39 18.57		
	I II III $p$ VII VIII	$\alpha$ 2.9991 Apr. 27.2749 .3386 ” 792 114		I II III $p$ — VII VIII	$\alpha$ 2.9991 Apr. 27.2749 .3386 — .3445 788 114		I II III $p$ VII VIII	$\alpha$ 11.3759 Apr. 27.2749 .3357 ” 9 114		I II III $p$ — VII VIII	$\alpha$ 11.3759 Apr. 27.2749 .3357 — .3938 12 113
	Apr. 30.7032			Apr. 30.3583			May 8.9988			May 8.6052	

## ACCESSORY QUANTITIES

$\odot$	99° 18'.3	99° 18'.3	99° 18'.3	99° 18'.3
$\log R_r$	”	40° 23' 26".8	”	48° 22' 35".0
$\log \Delta$	”	.003477	”	.004324
$z$	.670520	.670176	.679354	.678912
$p$	184° 9' 8".0	184° 7' 34".2	184° 46' 44".5	184° 44' 57".4
To compare)	”	—7° 19' 22".1	”	—8° 23' 40".6
with Sat.)	184° 15.222	176° 8.0336	184° 77.903	176° 35.467
$\oplus$ , Jovic. Lat.	”	—0.11874	”	—0.10571

# Introduction

## SATELLITE IV—LONGITUDE LATITUDE AND RADIUS VECTOR

886

Ap 13 7 3

Ap 13 358300

M y 8 9988

M y 8 6 5 00

	Ag m t	L g t d	Ag m t	L g t d	Ag m t	L g t d	Ag m t	I g t d
IX X	(8 ) 97 97 A 96	IX X XI { 3 436 68 533 6 15 9978 69 3	A 6	IX X XI { 3 436 68 533 6 7 54989 79 4	A 36	IX X XI { 00 3 436 41 3 1 3554 8983	A 1 94	IX X XI { 3 436 41 3 1 94 67 1 7
IX X	(5 49) 86 3 4 B 4 7	XII XIII XIV XV 3983 35	B 3 9	XII XIII XIV XV 383 4 84	B 3 55	XII XIII XIV XV 53 5 593 438	B 3 5	XII XIII XIV XV 93 5 569 62
IX X	(87 477) 6 699 7 994 C 7	XVI XVII XVIII XIX XX 333	C 8 5	XVI XVII XVIII XIX XX 334 3 8	C 0 466	XVI XVII XVIII XIX XX 3 65 57	C 7	XVI XVII XVIII XIX XX 3 64 57
IX X	(83 3 6) 7 43 3 84 D 1 85	XXI XXII XXIII XXIV XXV 3 4 59 6	D 74	XXI XXII XXIII XXIV XXV 57 1 447 47 68	D 687	XXI XXII XXIII XXIV XXV 57 3 58 6	D 93	XXI XXII XXIII XXIV XXV 57 36 49 144 7
IX X	(83 3 954) 8 7 538 3 87 E 57538		E 3 48		E 4 18 5		E 3 7869	
IX X	(49 84 ) 67 387 F 2 57	84 63	F 7	76 7 749	F 9 353	4 75535	I 8 959	356 25991
IX X	( 6 ) 5 8 3 43 G 3	C mp <sup>t</sup> XL V — a 0 79 — a 0 5	G 8 6	C mp XL V + a 7587 + a 353 +5	G 5	C mp XL V + a 368 + a 001	G 8 3	C mp XL V + a 9476 + a 00441 —8
IX X	(83 83) 4 4 983 H 4 397	V t	H 4 5	V t	H 693	Var t	H 2 99	V t
IX X	(5667 4) 936 3 7 57	XXVI XXVII XXVIII XXIX — 7 47	I 886 3	XXVI XXVII XXVIII XXIX + 63 5 7 9	I 886 4	XXVI XXVII XXVIII XXIX — 00 9 49 59	I 886 4	XXVI XXVII XXVIII XXIX — 3 7 44 63
IX X	(83 3 98) 6 745 5 3 88 9 J —5 6 5 4	— 37	J 8 34 +354	+ 51	J 3 8 +	+ 38	J 838 +44	— 00 79
IX X	( 656) 5 34 3 885 K 883	P d V 498 89	K 538	R d V 499 36	K 835	R d V 499 8	K 441	R d V 498 54
IX X	( 66) 5 8 3 9 L 36	L t t d	L	L t t d	L 1 3	L t t d	L 9	L t t d
IX X	(83 3 4) 3 94 9 3 8898 M —5 7 83 7	XXX XXXI XXXII XXXIII XXXIV XXXV 34475 6569 9 369 5 59 5	M 7 4858 +35	XXX XXXI XXXII XXXIII XXXIV XXXV 46304 8 7 734 389 3 56 7	M 6 63 +	XXX XXXI XXXII XXXIII XXXIV XXXV 3 978 464 65 45 54 46	M 5 73 7	XXX XXXI XXXII XXXIII XXXIV XXXV 8 67 93 8 678 44 48 5
IX X	(83 3 6) 4 864 3 9 8 N 8 78	XXXVI XXXVII XXXVIII — 5 5	N 8 437	XXXVI XXXVII XXXVIII — 1 874	N 394	XXXVI XXXVII XXXVIII + 46	N	XXXVI XXXVII XXXVIII + 571 + 384
IX X	(83 8) 3 39 97 O 6 36	5341	O 6	54856	O 14 66	2 45 89	O 4 6	2 4 87
IX X	(83 ) 75 2 51 P 5 6	XLII XLIII XLIV + 6 62	P 4 9	XLII XLIII XLIV — 63 + 6	P 6 68	XLII XLIII XLIV + 16 — 6	P 6 8	XLII XLIII XLIV — 61 — 49
IX X	(83 38) 4 3 4 33 Q 1 84	5349	Q 1 49	54854	Q 1 4	45 44	Q 9 74	40077
IX X	(83 5) 6 5 3 43 R 73	XXXIX — 9647	R 38	XXXIX —1 6940	R 1 3	XXXIX +1 9 9	R 63	XXXIX +1 6 19

# Tables of the Four Great Satellites of Jupiter

SATELLITE IV—PHENOMENA, 1886 APRIL 30, MAY 8

Eclipse, Dis. and Re.

Occultation, Dis. and Re.

Shadow, Ing. and Eg.

Transit, Ing. and Eg.

Semidurations				
XLV	<sup>d</sup> 0°026549	<sup>d</sup> 0°031205	<sup>d</sup> 0°030747	<sup>d</sup> 0°043824
XLVI	"	"	"	"
XLVII	"	"	"	"
XLVIII	"	"	"	"
XLIX	—50	—50	"	"
L	11	11	11	12
LI	"	+125	"	—77
	<u>0°026510</u>	<u>0°031291</u>	<u>0°030758</u> Ing.	<u>0°043759</u> Eg.
LXI	"	"	—335	—477
			<u>0°030423</u> Eg.	<u>0°043282</u> Ing.
Reductions to Middle				
LII	<sup>d</sup> —0°003732	<sup>d</sup> —0°003744	<sup>d</sup> —0°004879	<sup>d</sup> —0°004839
LIII	364	502	322	510
LIV	158	146	167	151
LV	63	70	64	72
LVI	22	23	78	78
LVII	10	10	"	"
LVIII	"	"	90	90
LIX	"	—345	"	"
LX	"	"	"	—436
Var.	+1	—5	—2	+8
	<u>—0°003114</u>	<u>—0°003343</u>	<u>—0°004160</u> Ing.	<u>—0°004366</u> Eg.
LXI	"	"	+92	+97
			<u>—0°004068</u> Eg.	<u>—0°004269</u> Ing.
Apparent Times of the Phenomena				
CIV, CV Approx. Comp <sup>t</sup> . Semidur <sup>n</sup> . Reduction	<sup>d</sup> Apr. 30°7025 30°703200 — 502 —26510 — 3114 —30126 ← Apr. 30°700099	<sup>d</sup> Apr. 30°27003 30°358300 3535 —31291 — 3343 —34634 ← Apr. 30°354204	<sup>d</sup> May 8°027581 8°998800 1102 —30758 — 4160 —34918 ← May 8°992565	<sup>d</sup> May 8°027552 8°605200 4402 —43282 — 4269 —47551 ← May 8°589603
CIV, CV Approx. Comp <sup>t</sup> . Semidur <sup>n</sup> . Reduction	<sup>d</sup> Apr. 30°7025 30°703200 — 502 26510 — 3114 — 3616 ← Apr. 30°753119	<sup>d</sup> Apr. 30°27003 30°358300 3535 31291 — 3343 — 3343 ← Apr. 30°416786	<sup>d</sup> May 8°027581 8°998800 1102 30423 — 4068 — 4068 ← May 9°053838	<sup>d</sup> May 8°027552 8°605200 4402 43759 — 4366 — 4366 ← May 8°676547
CVIII LXIII, LXIV	Ecl., Dis. Apr. 30 <sup>d</sup> 16 <sup>h</sup> 48 <sup>m</sup> 8 <sup>s</sup> 6 Re. 18 4 29 5 Δ(k) per 1 <sup>s</sup> ± 00119	Oc., Dis. Apr. 30 <sup>d</sup> 8 <sup>h</sup> 30 <sup>m</sup> 3 <sup>s</sup> 2 Re. 10 0 10 3	Sh., Ing. May 8 <sup>d</sup> 23 <sup>h</sup> 49 <sup>m</sup> 17 <sup>s</sup> 6 Eg. 9 1 17 31 6	Tr., Ing. May 8 <sup>d</sup> 14 <sup>h</sup> 9 <sup>m</sup> 1 <sup>s</sup> 7 Eg. 16 14 13 7

# SATELLITE I



## Approximate Tables

of true

Heliocentric and Geocentric Conjunction

# SATELLITE I

## Approximate Tables of Conjunction

I

Epochs of Conjunction

1	2	3	4	5	6	7	8	
Year	Conjunction	Variation for 100 <sup>d</sup>	$\alpha$	$\beta$	$\gamma$	$\delta$	$\epsilon$	
<b>1850</b>	<sup>d</sup> 1°0169	...	<sup>d</sup> 1786°1	333°32	<sup>d</sup> 0°5	<sup>d</sup> 1°342	<sup>d</sup> °99	Column 2 corrected by the equations from the following tables, gives superior conjunction as required for Eclipses and Occultations. To find inferior conjunction for Shadows and Transits, add (or subtract) one half the synodic period, <i>i. e.</i> 0 <sup>d</sup> .8849, to the numbers in columns 2, 4, 5, 6, 7, 8.
<b>1851</b>	0°6082	...	2150°8	299°03	365°1	1°048	1°14	
<b>*1852</b>	0°1995	...	2515°6	264°74	364°4	°753	1°28	
<b>1853</b>	0°5607	...	2882°1	232°21	0°3	°466	1°43	
<b>1854</b>	0°1519	...	3246°7	197°92	364°9	°172	1°58	
<b>1855</b>	1°5132	...	3613°2	165°40	0°7	1°648	1°73	
<b>*1856</b>	1°1043	...	3977°5	131°11	0°0	1°353	°11	
<b>1857</b>	1°4654	...	11°2	98°58	1°1	1°066	°26	
<b>1858</b>	1°0566	...	375°7	64°29	0°5	°772	°41	
<b>1859</b>	0°6479	...	740°2	30°00	365°1	°478	°56	
<b>*1860</b>	0°2392	...	1104°9	394°59	364°4	°184	°71	The constant -0 <sup>d</sup> .0333 has been applied to each of the entries in column 2.
<b>1861</b>	0°6003	...	1471°5	362°07	0°2	1°659	°86	The constant -0 <sup>d</sup> .030 has been applied to each of the entries in column 7.
<b>1862</b>	0°1918	...	1836°4	327°77	364°8	1°365	1°01	
<b>1863</b>	1°5529	...	2202°8	295°25	0°7	1°078	1°16	
<b>*1864</b>	1°1440	...	2567°0	260°96	0°0	°784	1°30	
<b>1865</b>	1°5049	- °0001	2932°8	228°44	1°1	°497	1°45	The constant -0 <sup>d</sup> .03 has been applied to each of the entries in column 8.
<b>1866</b>	1°0959	- °0001	3296°9	194°14	0°4	°203	1°60	
<b>1867</b>	0°6868	- °0001	3660°6	159°85	365°0	1°671	1°75	
<b>*1868</b>	0°2780	...	4024°9	125°56	364°3	1°377	°13	
<b>1869</b>	0°6391	...	58°7	93°03	0°2	1°090	°28	For Eclipses the argument $\gamma$ is not wanted.
<b>1870</b>	0°2306	+ °0001	423°7	58°74	364°8	°796	°43	
<b>1871</b>	1°5920	+ °0001	790°8	26°22	0°6	°508	°58	
<b>*1872</b>	1°1835	+ °0001	1156°2	390°81	365°2	°214	°73	
<b>1873</b>	1°5449	...	1523°1	358°29	1°1	1°690	°88	
<b>1874</b>	1°1362	...	1888°0	323°99	0°4	1°396	1°02	
<b>1875</b>	0°7275	...	2252°5	289°70	365°0	1°101	1°17	
<b>*1876</b>	0°3186	- °0001	2616°5	255°41	364°3	°807	1°32	
<b>1877</b>	0°6794	- °0001	2982°2	222°89	0°2	°520	1°47	
<b>1878</b>	0°2703	- °0001	3346°1	188°59	364°7	°226	1°62	
<b>1879</b>	1°6312	...	3711°8	156°07	0°6	1°702	°00	
<b>*1880</b>	1°2224	...	4076°3	121°78	365°2	1°407	°15	
<b>1881</b>	1°5836	...	110°4	89°25	1°0	1°120	°30	
<b>1882</b>	1°1752	+ °0001	475°6	54°96	0°4	°826	°45	
<b>1883</b>	0°7667	+ °0001	840°8	20°67	364°9	°532	°60	
<b>*1884</b>	0°3581	...	1205°8	385°26	364°3	°238	°75	
<b>1885</b>	0°7192	...	1572°2	352°74	0°1	1°713	°89	
<b>1886</b>	0°3104	...	1936°6	318°44	364°7	1°419	1°04	
<b>1887</b>	1°6714	...	2302°6	285°92	0°5	1°132	1°19	
<b>*1888</b>	1°2625	...	2666°8	251°63	365°1	°838	1°34	
<b>1889</b>	1°6235	...	3032°8	219°11	1°0	°551	1°49	
<b>1890</b>	1°2147	...	3397°3	184°81	0°3	°256	1°64	
<b>1891</b>	0°8061	...	3762°2	150°52	364°9	1°725	°02	
<b>*1892</b>	0°3975	...	4127°2	116°23	364°2	1°431	°17	
<b>1893</b>	0°7588	...	161°4	83°71	0°1	1°144	°32	
<b>1894</b>	0°3503	...	526°4	49°41	364°7	°849	°47	
<b>1895</b>	1°7114	...	892°9	16°89	0°5	°562	°61	
<b>*1896</b>	1°3027	...	1257°4	381°48	365°1	°268	°76	
<b>1897</b>	1°6637	...	1623°6	348°96	0°9	1°744	°91	
<b>1898</b>	1°2549	...	1987°8	314°67	0°3	1°449	1°06	
<b>1899</b>	0°8459	...	2352°0	280°37	364°9	1°155	1°21	
<b>1900</b>	0°4371	...	2716°4	246°08	364°2	°861	1°36	
Period	...	...	4332°6	398°88	365°3	1°763	1°77	

# SATELLITE I

## Approximate Tables of Conjunction

I continued

Epochs of Conjunction

		3	4	5	6	7	8	
Ye r	Conjun- tion	V iation fo 100 <sup>d</sup>	$\alpha$	$\beta$	$\gamma$	$\delta$		
1900	<sup>d</sup> 0 4371		<sup>d</sup> 2716 4	246 08	364 2	<sup>d</sup> 861	<sup>d</sup> 1 36	<p>Column 2 corrected by the equations from the following tables vs superior conjunction as required for eclipses and occultations. Find inferior conjunction for Shadows and Transits add (or subtract) one half the synodic period 0<sup>h</sup> 18<sup>m</sup> 49<sup>s</sup> to the numbers in columns 4 5 6 7 8.</p> <p>The constant -0<sup>d</sup> 0333 has been applied to each of the entries in column 7.</p> <p>The constant -0<sup>d</sup> 030 has been applied to each of the entries in column 7.</p> <p>The constant -0<sup>h</sup> 03 has been applied to each of the entries in column 8.</p> <p>For Eclipses the argument <math>\gamma</math> is not wanted.</p>
1901	0284		3081 1	11 79	363 5	567	1 51	
1902	1 3896		3447 8	179 6	364 6	8	1 66	
1903	0 9810		3812 6	144 97	364	1 748	04	
*1904	0 5723		4177 3	11 68	363 3	1 454	19	
1905	0 9333		210 8	78 16	364 4	1 167	34	
1906	0 5 45		575	43 86	363 7	873	48	
1907	0 1157		939 6	9 57	363 1	578	63	
*1908	1 4767		13 59	375 93	364	291	78	
1909	0 0680		1670 5	341 64	363 5	1 760	93	
1910	1 4291		2036 8	3 9 12	364 6	1 473	1 08	
1911	1 0 05		401 6	74 8	363 9	1 179	1 3	
*1912	0 6118		766 3	40 53	363 3	884	1 38	
1913	0 9730		313 8	208 01	364 4	597	1 53	
1914	0 5642		3497 4	173 7	363 7	3 3	1 68	
1915	0 1554		386 8	139 4	363 0	009	06	
1916	1 5164		42 7 9	106 90	364 1	1 484	21	<p>The constant -0<sup>h</sup> 03 has been applied to each of the entries in column 8.</p> <p>For Eclipses the argument <math>\gamma</math> is not wanted.</p>
1917	1 76		259 6	7 61	363 5	1 19	35	
1918	4687		6 60	4 8	364 6	903	50	
1919	1 6		990 7	5 79	363 9	609	65	
1920	0 6513		1355 5	370 38	363 2	315	8	
1921	1 0126		17 2 1	337 86	364 3	8	95	
1922	0 6040		2087 1	303 57	363 7	1 496	1 10	
1923	1951		451 3	269 7	363 0	1 202	1 5	
*1924	1 5562		817 6	36 75	364 1	915	1 40	
1925	0 1471	- 0001	3 81 4	02 46	363 4	621	1 55	
1926	1 5080	- 0001	3547 0	169 94	364 5	334	1 7	
1927	1 0989	- 0001	3910 9	135 64	363 9	39	08	
1928	6901		4275	1 1 35	363 2	1 508	2	
1929	1 0512		3 9	68 83	364 3	1 21	37	
1930	6428	+ 0001	674	34 53	363 6	926	52	
1931	0 343	+ 0001	1039 5	0 24	363 0	63	67	<p>The constant -0<sup>h</sup> 03 has been applied to each of the entries in column 8.</p> <p>For Eclipses the argument <math>\gamma</math> is not wanted.</p>
*1932	1 5957	+ 0001	1406 6	366 6	364 1	345	8	
1933	187		1771 8	33 31	363 4	051	97	
1934	1 5484		138 3	299 79	364 5	1 5 7	1 12	
1935	1 1396		2502 7	65 49	363 8	1 23	1 7	
*1936	0 7306	- 0 01	866 7	31 20	363 1	938	1 42	
1937	1 0914	- 0 01	3 32 3	198 68	364 3	651	1 57	
1938	0 68 3	- 0001	3596 1	164 39	363 6	357	1 71	
1939	0 734		3960 3	130 9	362 9	063	09	
*1940	1 6345		43 6 5	97 57	364 0	1 538	4	
1941	0 60	+ 01	358 9	63 28	363 3	1 244	39	
1942	1 5873	+ 001	7 5 9	30 76	364 4	957	54	
1943	1 1787		1091 0	395 35	363 8	663	69	
*1944	0 7701		1455 9	361 05	363 1	369	84	
1945	1 131		182 2	328 53	364 2	81	99	
1946	0 7 5		2186 6	94 24	363 5	1 550	1 14	
1947	0 3136		55 8	59 95	36 9	1 56	1 29	
1948	1 6746		2916 9	227 4	364 0	969	1 44	
1949	0 657		3 81 3	193 13	363 3	674	1 58	
1950	1 6269		3647 6	16 61	364 4	387	1 73	
Per od			4332 6	398 88	365 3	1 763	1 77	



# SATELLITE I

## Approximate Tables of Conjunction

I continued

Epochs of Conjunction

1	2	3	4	5	6	7	8	
Year	Conjunction	Variation for 100 <sup>d</sup>	$\alpha$	$\beta$	$\gamma$	$\delta$	$\epsilon$	
1950	<sup>d</sup> 1'6269	...	<sup>d</sup> 3647'6	160'61	<sup>d</sup> 364'4	<sup>d</sup> 387	<sup>d</sup> 1'73	Column 2 corrected by the equations from the following tables, gives superior conjunction as required for Eclipses and Occultations. To find inferior conjunction for Shadows and Transits, add (or subtract) one half the synodic period, i.e. 0 <sup>d</sup> .8849, to the numbers in columns 2, 4, 5, 6, 7, 8.
1951	1'2182	...	4012'5	126'31	363'7	093	11	
*1952	0'8096	...	44'8	92'02	363'1	1'562	26	
1953	1'1709	...	411'6	59'50	364'2	1'275	41	
1954	0'7623	...	776'4	25'21	363'5	0'980	56	
1955	0'3535	...	1141'1	389'80	362'8	0'686	71	
*1956	1'7147	...	1507'3	357'27	364'0	0'399	86	
1957	0'3058	...	1871'7	322'98	363'3	0'105	101	
1958	1'6668	...	2237'7	290'46	364'4	1'580	116	
1959	1'2580	...	2602'1	256'17	363'7	1'286	131	
*1960	0'8492	...	2966'6	221'87	363'0	0'992	145	The constant -0 <sup>d</sup> .0333 has been applied to each of the entries in column 2.
1961	1'2104	...	3333'2	189'35	364'1	0'705	160	The constant -0 <sup>d</sup> .030 has been applied to each of the entries in column 7.
1962	0'8017	...	3698'0	155'06	363'5	0'411	175	
1963	0'3931	...	4062'7	120'76	362'8	0'116	193	
*1964	1'7542	...	96'5	88'24	363'9	1'592	28	
1965	0'3453	...	460'8	53'95	363'2	1'298	43	
1966	1'7064	...	827'0	21'43	364'4	1'011	58	The constant -0 <sup>d</sup> .03 has been applied to each of the entries in column 8.
1967	1'2977	...	1191'6	386'02	363'7	0'717	73	
*1968	0'8887	...	1555'9	351'72	363'0	0'422	88	
1969	1'2499	...	1922'3	319'20	364'1	0'135	103	
1970	0'8413	...	2287'1	284'91	363'4	1'604	117	
1971	0'4326	...	2651'9	250'62	362'8	1'310	132	For Eclipses the argument $\gamma$ is not wanted.
*1972	0'0239	...	3016'6	216'32	362'1	1'015	147	
1973	0'3850	...	3383'1	183'80	363'2	0'728	162	
1974	1'7461	...	3749'2	151'28	364'3	0'441	180	
1975	1'3372	...	4113'5	116'99	363'6	0'147	195	
*1976	0'9284	...	145'3	82'69	363'0	1'615	30	
1977	1'2897	...	512'1	50'17	364'1	1'328	45	
1978	0'8807	...	876'0	15'88	363'4	1'034	60	
1979	0'4719	...	1240'7	380'47	362'7	0'740	75	
*1980	0'0634	...	1605'7	346'18	362'1	0'446	90	
1981	0'4247	...	1972'4	313'65	363'2	0'159	104	
1982	0'0161	...	2337'3	279'36	362'5	1'627	119	
1983	1'3772	...	2703'6	246'84	363'6	1'340	134	
*1984	0'9682	...	3067'6	212'54	362'9	1'046	149	
1985	1'3294	- '0001	3433'2	180'02	364'0	0'759	164	
1986	0'9199	- '0001	3796'9	145'73	363'4	0'464	182	
1987	0'5109	...	4160'8	111'44	362'7	0'170	197	
*1988	0'1021	...	192'7	77'14	362'0	1'639	32	
1989	0'4633	...	559'3	44'62	363'1	1'352	47	
1990	0'0547	+ '0001	924'4	10'33	362'5	1'057	62	
1991	1'4162	+ '0001	1291'5	376'69	363'6	0'770	77	
*1992	1'0077	+ '0001	1656'8	342'40	362'9	0'476	92	
1993	1'3690	...	2023'7	309'87	364'0	0'189	106	
1994	0'9604	...	2388'4	275'58	363'3	1'658	121	
1995	0'5516	- '0001	2752'7	241'29	362'7	1'363	136	
*1996	0'1425	- '0001	3116'5	207'00	362'0	1'069	151	
1997	0'5032	- '0001	3482'1	174'47	363'1	0'782	166	
1998	0'0943	- '0001	3846'0	140'18	362'4	0'488	184	
1999	1'4552	...	4212'0	107'66	363'5	0'201	199	
*2000	1'0465	...	243'9	73'36	362'9	1'669	34	
Period	...	...	4332'6	398'88	365'3	1'763	1'77	

# SATELLITE I

## Approximate Tables of Conjunction

II

Motions of the Arguments

Syn Rev	Date		3	4	5	Syn Rev	Date		3	4	5
			$\alpha \beta \gamma$	$\delta$					$\alpha \beta \gamma$	$\delta$	
			l	d	d				a	d	d
1	January	1 7699	1 77	007	00	53	April	3 8026	93 80	378	04
2		3 5397	3 54	014	00	54		5 57 5	95 57	385	04
3		5 3096	5 31	021		55		7 34 3	97 34	39	04
4		7 794	7 8	29	00	56		9 11	99 11	399	04
5		8 8493	8 85	36	00	57		10 882	100 88	4 6	04
6		10 6192	1 62	043	00	58		12 6519	102 65	413	04
7		12 3890	1 39	050	01	59		14 4 18	104 4	421	04
8		14 1589	14 6	057	01	60		16 1916	106 19	4 8	4
9		15 9 87	15 93	64	01	61		17 9615	107 96	435	04
10		17 6986	17 7	71	01	62		19 7314	109 73	442	04
11		19 4685	19 47	078	1	63		21 5012	111 50	449	05
12		1 2383	21 24	086	01	64		3 711	113 7	456	05
13		3 008	23 01	93	01	65		25 0409	115 04	463	05
14		4 7780	4 78	100	01	66		6 8108	116 81	470	5
15		26 5479	6 55	107	1	67		28 5807	118 58	478	05
16		8 3178	8 3	114	01	68		3 3505	1 0 35	485	05
17		30 0876	30 09	121	01	69	May	1204	1 2 1	492	05
18		31 8575	3 86	128	01	70		3 8902	123 89	499	05
19	February	2 6273	33 63	135	01	71		5 6601	1 5 66	506	05
20		4 3972	35 40	143	01	72		7 4300	127 43	513	05
21		6 1671	37 17	150	02	73		9 1998	129 20	520	05
22		7 9369	38 94	157	02	74		10 9697	130 97	5 8	05
23		9 7 68	40 71	164	0	75		12 7395	132 74	535	05
24		11 4767	42 48	171	02	76		14 5094	134 51	542	05
25		13 465	44 25	178	2	77		16 2793	136 28	549	06
26		15 0164	46 0	185	2	78		18 0491	138 05	556	6
27		16 786	47 79	19	0	79		19 8190	139 82	563	06
28		18 5561	49 56	00	0	80		21 5888	141 59	570	06
29		0 3 60	51 33	7	0	81		3 3587	143 36	577	06
30		22 0958	53 10	214	02	82		25 1 86	145 13	585	06
31		23 8657	54 87	221	02	83		26 8984	146 90	592	06
32		25 6355	56 64	8	0	84		28 6683	148 67	599	06
33		7 4054	58 41	35	02	85		30 4381	150 44	606	06
34	March	1 1753	6 18	242	02	86	June	1 080	152 21	613	06
35		2 9451	61 95	250	03	87		2 9779	153 98	620	06
36		4 7150	63 7	57	03	88		4 7477	155 75	627	06
37		6 4848	65 48	64	03	89		6 5176	157 5	634	06
38		8 547	67 5	71	03	90		8 874	159 29	64	06
39		10 246	69 2	78	03	91		10 0573	161 06	649	07
40		11 7944	70 79	285	3	92		11 8 72	162 83	656	07
41		13 5643	72 56	29	03	93		13 5970	164 60	663	07
42		15 3341	74 33	99	03	94		15 3669	166 37	670	07
43		17 1040	76 10	307	03	95		17 1367	168 14	677	07
44		18 8739	77 87	314	03	96		18 9066	169 91	684	07
45		20 6437	79 64	321	3	97		0 6765	171 68	691	07
46		4 136	81 41	328	03	98		22 4463	173 45	699	07
47		4 1834	83 18	335	03	99		4 162	175 22	706	07
48		5 9533	84 95	342	03	100		5 9860	176 99	713	07
49		7 7 3	86 7	349	04	101		27 7559	178 76	720	07
50		9 493	88 49	356	04	102		9 5258	180 53	727	07
51		31 6 9	90 26	364	04	103	July	1 956	182 30	734	07
52	April	2 03 7	92 03	371	04	104		3 0655	184 07	741	8

I L p Y l i m i h t l t C l m l y f t F l 8

T h t i t b l d d t l f t h l I

# SATELLITE I

## Approximate Tables of Conjunction

II continued

Motions of the Arguments

1	2	3	4	5	1	2	3	4	5
Syn. Rev.	Date	$\alpha, \beta, \gamma$	$\delta$	$\epsilon$	Syn. Rev.	Date	$\alpha, \beta, \gamma$	$\delta$	$\epsilon$
	d	d	d	d		d	d	d	d
105	July	4.8354	185.84	.749	157	October	4.8681	277.87	1.119
106		6.6052	187.61	.756	158		6.6380	279.64	1.126
107		8.3751	189.38	.763	159		8.4078	281.41	1.133
108		10.1449	191.14	.770	160		10.1777	283.18	1.141
109		11.9148	192.91	.777	161		11.9475	284.95	1.148
110		13.6847	194.68	.784	162		13.7174	286.72	1.155
111		15.4545	196.45	.791	163		15.4873	288.49	1.162
112		17.2244	198.22	.798	164		17.2571	290.26	1.169
113		18.9942	199.99	.806	165		19.0270	292.03	1.176
114		20.7641	201.76	.813	166		20.7968	293.80	1.183
115		22.5340	203.53	.820	167		22.5667	295.57	1.190
116		24.3038	205.30	.827	168		24.3366	297.34	1.198
117		26.0737	207.07	.834	169		26.1064	299.11	1.205
118		27.8435	208.84	.841	170		27.8763	300.88	1.212
119		29.6134	210.61	.848	171		29.6461	302.65	1.219
120		31.3833	212.38	.855	172		31.4160	304.42	1.226
121	August	2.1531	214.15	.863	173	November	2.1859	306.19	1.233
122		3.9230	215.92	.870	174		3.9557	307.96	1.240
123		5.6928	217.69	.877	175		5.7256	309.73	1.248
124		7.4627	219.46	.884	176		7.4954	311.50	1.255
125		9.2326	221.23	.891	177		9.2653	313.27	1.262
126		11.0024	223.00	.898	178		11.0352	315.04	1.269
127		12.7723	224.77	.905	179		12.8050	316.81	1.276
128		14.5421	226.54	.912	180		14.5749	318.57	1.283
129		16.3120	228.31	.920	181		16.3447	320.34	1.290
130		18.0819	230.08	.927	182		18.1146	322.11	1.297
131		19.8517	231.85	.934	183		19.8845	323.88	1.305
132		21.6216	233.62	.941	184		21.6543	325.65	1.312
133		23.3914	235.39	.948	185		23.4242	327.42	1.319
134		25.1613	237.16	.955	186		25.1941	329.19	1.326
135		26.9312	238.93	.962	187		26.9639	330.96	1.333
136		28.7010	240.70	.970	188		28.7338	332.73	1.340
137		30.4709	242.47	.977	189		30.5036	334.50	1.347
138	September	1.2407	244.24	.984	190	December	2.2735	336.27	1.354
139		3.0106	246.01	.991	191		4.0434	338.04	1.362
140		4.7805	247.78	.998	192		5.8132	339.81	1.369
141		6.5503	249.55	1.005	193		7.5831	341.58	1.376
142		8.3202	251.32	1.012	194		9.3529	343.35	1.383
143		10.0901	253.09	1.019	195		11.1228	345.12	1.390
144		11.8599	254.86	1.027	196		12.8927	346.89	1.397
145		13.6298	256.63	1.034	197		14.6625	348.66	1.404
146		15.3996	258.40	1.041	198		16.4324	350.43	1.411
147		17.1695	260.17	1.048	199		18.2022	352.20	1.419
148		18.9394	261.94	1.055	200		19.9721	353.97	1.426
149		20.7092	263.71	1.062	201		21.7420	355.74	1.433
150		22.4791	265.48	1.069	202		23.5118	357.51	1.440
151		24.2489	267.25	1.076	203		25.2817	359.28	1.447
152		26.0188	269.02	1.084	204		27.0515	361.05	1.454
153		27.7887	270.79	1.091	205		28.8214	362.82	1.461
154		29.5585	272.56	1.098	206		30.5913	364.59	1.469
155	October	1.3284	274.33	1.105	207		32.3611	366.36	1.476
156		3.0982	276.10	1.112					

In Leap Year, diminish the date in Column 2 by  $r^4$  after Feb. 28.

The entries to be added to those of Table I.

# SATELLITE I

## Approximate Tables of Conjunction

III      Equation of Conjunction      Argument  $a$       Ec, Oc, Sh, Tr

$a$	Equation	$\Delta_o$	$a$	Equation	$\Delta_{ro}$	$a$	Equation	$\Delta_{oi}$	$a$	Equation	$\Delta_o$	$a$	Equation	$\Delta_{od}$
0	0030	+4	1000	057	+03	2000	00361	35	3000	0051	-15	4000	167	+35
20	308	4	1020	572	00	2020	354	35	3020	48	15	4020	174	38
40	317	42	1040	57	00	2040	347	38	3040	45	13	4040	18	38
60	35	40	1060	57	0	2060	339	38	3060	43	13	4060	189	38
80	333	4	1080	572	-03	2080	332	35	3080	40	13	4080	197	40
100	342	4	1100	57	03	2100	35	38	3100	38	10	4100	05	40
120	35	+40	1120	0571	-03	2120	00317	-38	3120	0036	-1	4120	0213	+40
140	358	40	1140	570	05	2140	310	38	3140	34	10	4140	1	4
160	366	40	1160	569	8	2160	30	38	3160	32	8	4160	9	40
180	374	40	1180	567	10	2180	95	35	3180	31	05	4180	37	40
200	38	40	1200	565	10	2200	88	38	3200	30	05	4200	45	40
220	0039	+4	1220	0563	-10	2220	00280	-38	3220	009	-05	4220	00253	+40
240	398	4	1240	561	10	2240	273	38	3240	28	-03	4240	61	43
260	46	38	1260	559	10	2260	65	38	3260	8	0	4260	70	43
280	413	38	1280	557	13	2280	58	35	3280	8	0	4280	78	4
300	421	38	1300	554	15	2300	51	36	3300	28	00	4300	86	43
320	00428	+38	1320	0551	-15	2320	00243	38	3320	00028	00	4320	0295	+43
340	436	38	1340	548	18	2340	36	35	3340	8	+03	4340	33	40
360	443	35	1360	544	18	2360	29	35	3360	9	05	4360	311	43
380	450	35	1380	541	18	2380	22	35	3380	30	05	4380	320	43
400	457	33	1400	537	0	2400	215	35	3400	31	05	4400	328	4
420	00463	+33	1420	0533	-20	2420	0208	-35	3420	00032	+08	4420	00336	+43
440	470	33	1440	529		2440	201	35	3440	34	10	4440	345	43
460	476	30	1460	55	2	2460	194	35	3460	36	1	4460	353	40
480	48	30	1480	51	23	2480	187	35	3480	38	1	4480	361	40
500	488	30	1500	516	5	2500	180	33	3500	40	13	4500	369	40
520	00494	+30	1520	0511	-5	2520	0174	33	3520	00043	+15	4520	00377	+40
540	5	30	1540	506	5	2540	167	35	3540	46	15	4540	385	4
560	506	8	1560	501	5	2560	16	33	3560	49	15	4560	393	40
580	511	5	1580	496	5	2580	154	30	3580	52	15	4580	401	40
600	516	5	1600	491	28	2600	148	30	3600	55	18	4600	409	38
620	0051	+5	1620	0485	-8	2620	00142	-30	3620	00059	+0	4620	00416	+38
640	56	3	1640	480	28	2640	136	30	3640	63	20	4640	44	38
660	530		1660	474	30	2660	130	30	3660	67	23	4660	431	35
680	534	0	1680	468	30	2680	124	30	3680	72	3	4680	438	35
700	538	0	1700	46	3	2700	118	8	3700	76	23	4700	445	35
720	00542	+20	1720	00456	-30	2720	00113	-8	3720	00081	+25	4720	045	+35
740	546	18	1740	450	30	2740	17	8	3740	86	25	4740	459	35
760	549	15	1760	444	33	2760	12	25	3760	91	25	4760	466	33
780	55	15	1780	437	33	2780	97	5	3780	96	8	4780	47	33
800	555	15	1800	431	33	2800	9	5	3800	1	3	4800	479	33
820	558	+15	1820	0044	-35	2820	087	-25	3820	0108	+3	4820	00485	+30
840	561	13	1840	417	35	2840	82	3	3840	114	30	4840	491	30
860	563	1	1860	410	33	2860	78	3	3860	10	30	4860	497	28
880	565	1	1880	404	33	2880	73	23	3880	16	33	4880	50	28
900	567	08	1900	397	35	2900	69	0	3900	133	33	4900	58	28
920	0568	+05	1920	00390	-35	2920	0065	-20	3920	00139	+33	4920	00513	+25
940	569	05	1940	383	35	2940	61	18	3940	146	35	4940	518	25
960	570	05	1960	376	38	2960	58	18	3960	153	35	4960	523	3
980	571	05	1980	368	38	2980	54	18	3980	160	35	4980	527	23
1000	0057	+03	2000	00361	-35	3000	00051	-15	4000	00167	+35	5000	00532	+3

# SATELLITE I

## Approximate Tables of Conjunction

IV			Equation for Geocentric Conjunction			Argument $\beta$			Oc., Tr.		
1	2	3	1	2	3	1	2	3	1	2	3
$\beta$	Equation	$\Delta_{Td}$	$\beta$	Equation	$\Delta_{Td}$	$\beta$	Equation	$\Delta_{Td}$	$\beta$	Equation	$\Delta_{Td}$
d	d		d	d		d	d		d	d	
0	-0°0100	- 11	100	-0°0635	+ 2	200	-0°0096	+ 7	300	+0°0436	+ 1
2	121	10	102	632	2	202	82	7	302	439	1
4	142	11	104	628	2	204	67	7	304	441	1
6	163	10	106	623	2	206	53	7	306	443	+ 1
8	184	11	108	619	2	208	39	7	308	444	0
10	205	10	110	614	3	210	25	7	310	444	0
12	-0°0225	- 10	112	-0°0608	+ 3	212	-0°0010	+ 7	312	+0°0444	0
14	246	10	114	602	3	214	+ 4	7	314	444	0
16	266	10	116	596	3	216	18	7	316	443	- 1
18	286	10	118	589	4	218	32	7	318	441	1
20	305	10	120	582	4	220	46	7	320	439	1
22	-0°0324	- 9	122	-0°0574	+ 4	222	+0°0060	+ 7	322	+0°0436	- 2
24	343	9	124	566	4	224	74	7	324	433	2
26	361	9	126	558	4	226	87	7	326	429	2
28	379	9	128	549	4	228	101	7	328	425	2
30	397	9	130	540	5	230	114	7	330	420	3
32	-0°0413	- 8	132	-0°0531	+ 5	232	+0°0128	+ 7	332	+0°0414	- 3
34	430	8	134	521	5	234	141	7	334	407	4
36	446	8	136	511	5	236	154	6	336	400	3
38	461	8	138	501	5	238	167	7	338	393	4
40	476	7	140	491	5	240	180	6	340	385	4
42	-0°0490	- 7	142	-0°0480	+ 5	242	+0°0193	+ 6	342	+0°0376	- 5
44	503	7	144	469	6	244	205	6	344	366	5
46	516	6	146	458	6	246	217	6	346	356	5
48	529	6	148	446	6	248	229	6	348	345	6
50	540	6	150	435	6	250	241	6	350	334	6
52	-0°0551	- 5	152	-0°0423	+ 6	252	+0°0253	+ 6	352	+0°0322	- 6
54	562	5	154	411	6	254	264	6	354	309	7
56	572	5	156	398	6	256	275	5	356	296	7
58	581	4	158	386	6	258	286	6	358	282	7
60	589	4	160	373	6	260	297	5	360	267	8
62	-0°0597	- 4	162	-0°0360	+ 7	262	+0°0307	+ 5	362	+0°0252	- 7
64	604	4	164	347	6	264	317	5	364	237	8
66	611	3	166	334	7	266	327	5	366	221	8
68	617	3	168	321	7	268	336	5	368	204	9
70	622	3	170	307	7	270	345	4	370	187	9
72	-0°0627	- 2	172	-0°0293	+ 7	272	+0°0354	+ 5	372	+0°0169	- 9
74	631	2	174	280	7	274	363	4	374	151	9
76	635	2	176	266	7	276	371	4	376	133	9
78	638	1	178	252	7	278	378	4	378	114	10
80	640	1	180	238	7	280	386	4	380	94	10
82	-0°0642	- 1	182	-0°0224	+ 7	282	+0°0393	+ 4	382	+0°0075	- 10
84	643	- 1	184	210	7	284	399	3	384	55	10
86	644	0	186	196	7	286	405	3	386	35	10
88	645	0	188	182	7	288	411	3	388	+ 14	10
90	644	0	190	168	7	290	416	3	390	- 7	10
92	-0°0643	+ 1	192	-0°0153	+ 7	292	+0°0421	+ 2	392	-0°0027	- 10
94	642	1	194	139	7	294	426	2	394	48	11
96	640	1	196	125	7	296	430	2	396	69	10
98	638	1	198	110	7	298	433	2	398	91	11
100	-0°0635	+ 2	200	-0°0096	+ 7	300	+0°0436	+ 1	400	-0°0111	- 10

Applied Constant :  $-0^{\circ} 0100$ .

The Equation of Table IV, corrected by those of Tables V, VI, gives the Annual Parallax,  $p$ , which must be applied for Occultations and Transits to the entries in Columns 2, 7, 8. of Table I, and also serves as argument of Table LI for computing the effect of Jupiter's phase.

# SATELLITE I

## Approximate Tables of Conjunction

V      Equation for Geocentric Conjunction      Arguments  $\alpha, \beta$       Oc, Tr

$\alpha \backslash \beta$	0 <sup>d</sup>	20 <sup>d</sup>	40 <sup>d</sup>	60 <sup>d</sup>	80 <sup>d</sup>	100 <sup>d</sup>	120 <sup>d</sup>	140 <sup>d</sup>	160 <sup>d</sup>	180 <sup>d</sup>	200 <sup>d</sup>	220 <sup>d</sup>	240 <sup>l</sup>	260 <sup>d</sup>	280 <sup>l</sup>	300 <sup>l</sup>	320 <sup>l</sup>	340 <sup>d</sup>	360 <sup>l</sup>	380 <sup>d</sup>	400 <sup>d</sup>
0	70	58	48	42	41	43	48	54	6	65	70	75	80	87	9	97	99	97	91	81	69
100	79	66	55	47	4	4	45	49	54	59	64	69	75	8	89	96	10	10	98	89	78
200	88	75	6	51	44	4	42	45	49	54	58	63	69	76	85	93	101	104	103	97	87
300	96	83	69	57	47	41	40	41	44	48	5	57	63	71	80	91	1	17	109	15	95
400	14	92	77	6	5	4	38	38	40	43	47	51	57	66	76	88	99	108	113	11	13
500	111	99	84	68	53	43	37	35	36	39	4	46	5	60	71	84	98	19	116	117	111
600	117	106	91	13	57	45	37	34	33	35	38	41	47	55	66	81	96	19	119	12	117
700	123	13	97	79	61	47	38	33	31	3	34	37	4	5	6	77	93	109	10	15	12
800	17	118	13	84	66	50	39	33	3	3	31	34	38	46	57	73	9	17	11	128	127
900	130	122	18	89	70	53	41	33	9	9	9	31	35	4	53	68	86	105	10	19	130
1000	13	16	11	94	74	57	43	34	3	28	8	9	33	39	49	64	8	102	118	19	131
1100	13	18	116	98	79	61	46	37	31	8	8	28	31	36	46	6	78	98	116	18	132
1200	13	19	118	12	83	65	5	39	33	3	28	8	30	34	43	56	74	94	11	15	131
1300	129	18	119	105	87	69	54	43	36	32	30	9	3	33	41	53	70	89	107	1	129
1400	125	17	10	107	90	73	58	47	39	35	3	30	30	33	39	5	65	83	10	117	126
1500	11	14	119	108	93	77	63	51	43	38	35	33	32	33	38	47	61	78	96	111	11
1600	115	120	118	19	96	81	67	56	48	43	39	36	34	34	37	45	57	7	89	105	116
1700	109	115	115	9	98	85	7	61	5	48	43	40	37	36	38	43	53	67	8	98	109
1800	101	19	111	18	99	88	77	67	59	53	48	45	41	39	39	4	49	61	75	90	102
1900	93	103	107	16	100	91	81	7	66	59	54	5	46	4	4	41	46	55	68	81	94
2000	85	95	102	13	10	94	86	78	70	65	60	55	5	46	4	41	44	5	6	73	85
2100	76	87	96		10	96	90	83	76	71	66	61	56	5	45	4	4	46	53	64	77
2200	67	79	89	96	99	97	93	88	8	77	7	67	61	55	49	43	40	41	47	56	68
2300	58	7	8	9	97	98	96	92	87	83	78	73	67	60	53	45	4	38	40	48	59
2400	49	62	75	87	95	99	99	96	93	88	84	79	73	65	57	47	39	35	35	40	50
2500	41	54	68	8	9	99	101	100	97	94	90	85	79	71	61	50	40	33	3	33	4
2600	34	46	61	76	89	98	1	103	101	98	95	90	84	76	66	53	41	31	26	7	34
2700	7	38	54	71	85	96	13	105	105	10	99	96	90	81	70	57	43	31	3	1	7
2800	21	3	47	65	81	94	103	17	17	106	104	100	95	87	75	61	45	31	1	17	1
2900	16	5	41	59	77	92	10	17	19	19	107	104	99	91	8	65	48	3	0	14	16
3000	1		35	54	73	89	11	107	11	111	110	107	103	95	84	69	51	34	0	12	1
3100	9	16	31	49	69	86	99	107	111	1	111	110	106	99	88	73	55	36	1	11	10
3200	8	14	27	45	64	8	96	15	11	11	11	111	108	10	9	77	59	40	3	11	8
3300	8	1	3	41	60	78	93	103	19	111	11	1	110	105	95	81	63	44	6	13	8
3400	9	1	21	37	56	74	89	10	16	110	111	11	110	16	98	85	67	48	30	16	9
3500	1	1	0	35	5	70	85	96	103	17	11	111	11	107	10	88	7	53	34	20	1
3600	16	14	0	33	49	66	80	9	10	104	107	109	109	107	10	91	76	58	40	25	16
3700	1	17	1	3	46	6	76	87	95	10	104	106	107	16	10	94	81	64	46	31	0
3800	27	21	3	31	44	58	71	82	9	96	10	103	105	105	13	96	85	70	53	38	6
3900	34	7	6	3	4	54	66	77	85	91	95	98	101	13	1	97	88	75	6	45	33
4000	41	33	30	33	4	51	6	71	79	85	9	94	97	10	11	98	9	81	67	53	41
4100	49	40	35	35	40	48	57	66	74	79	84	88	93	97	99	99	95	86	75	61	49
4200	58	47	40	38	40	45	53	61	68	73	78	83	88	93	97	98	97	91	82	70	58
4300	67	55	46	4	40	44	49	55	62	67	7	77	82	88	94	98	99	96	89	79	66
4400	76	64	53	45	4	4	46	51	56	61	66	71	77	83	90	96	100	100	96	87	75
4500	85	72	6	50	44	41	43	46	51	55	60	65	71	78	86	94	101	13	10	95	84

Th it tli T bl q l

Appl d C t t +

Th ti p it

Th Eq t fli T bl t b dd dt th t T bl IV

# SATELLITE I

## Approximate Tables of Conjunction

VI		Equation for Geocentric Conjunction									Arguments $\beta, \gamma$									Oc., Tr.		
$\gamma \backslash \beta$	$\beta$	$0^d$ $20^d$ $40^d$			$60^d$ $80^d$ $100^d$			$120^d$ $140^d$ $160^d$			$180^d$ $200^d$ $220^d$			$240^d$ $260^d$ $280^d$			$300^d$ $320^d$ $340^d$			$360^d$ $380^d$ $400^d$		
$\gamma$	$\beta$																					
	$\alpha$																					
0		30	34	37	39	40	39	38	36	34	32	30	28	26	24	22	21	20	21	23	26	30
20		23	27	31	36	39	40	40	39	38	37	35	33	31	29	25	22	19	18	18	19	23
40		16	20	25	31	36	39	41	42	42	41	40	38	36	33	29	25	20	16	14	14	16
60		11	14	20	26	33	38	41	43	44	44	43	42	40	37	33	28	22	16	12	10	11
80		8	11	16	22	29	35	40	43	45	45	45	44	43	41	37	31	25	18	12	9	10
100		8	9	13	19	26	32	37	41	43	45	45	45	44	43	39	35	28	21	15	10	8
120		11	10	12	17	23	29	34	38	41	42	43	44	44	43	41	37	32	25	19	14	10
140		15	13	14	17	21	25	30	34	37	39	40	41	42	42	41	39	35	30	24	19	15
160		22	18	17	18	20	23	26	29	32	34	36	37	39	40	40	40	38	35	30	26	21
180		29	25	22	20	20	21	23	25	27	29	31	33	34	36	38	40	40	39	36	33	29
200		36	32	28	24	21	20	20	21	22	24	26	27	29	32	35	38	41	42	42	40	36
220		43	39	34	28	24	21	19	18	19	20	21	23	25	27	31	36	40	44	46	45	43
240		48	45	39	33	27	22	19	17	16	17	17	18	20	23	27	33	38	44	48	49	48
260		52	49	44	37	30	24	20	17	15	15	15	16	17	20	24	29	36	42	48	51	51
280		52	51	47	41	34	27	22	19	16	15	15	15	16	18	21	26	32	39	46	50	52
300		50	50	48	43	37	31	26	22	19	17	16	16	16	17	19	23	29	35	42	47	50
320		46	47	47	44	39	34	29	26	23	21	19	18	18	18	19	21	25	31	36	42	46
340		39	42	44	43	40	37	33	30	27	25	24	22	21	20	19	20	22	26	30	35	39
360		32	36	39	40	40	39	37	35	32	30	29	27	25	23	22	21	20	22	24	28	32
380		24	29	33	37	39	39	40	38	37	35	34	32	30	27	25	22	19	18	19	21	25
400		18	22	27	32	37	40	41	41	41	40	39	37	35	32	28	24	20	17	15	15	18

The unit in this Table equals  $0^d.0001$ .

Applied Constant:  $+30$ .

The entries are positive.

The Equation of this Table to be added to that of Table IV.

### VII

### Equations of Conjunction

### VIII

E., O., S., T.

1	2
$\delta$	Equation
$\alpha$	$\alpha$
0'00	0'0030
0'10	0'0022
0'20	15
0'30	10
0'40	7
0'50	8
0'60	0'0011
0'70	16
0'80	23
0'90	31
1'00	39
1'10	0'0046
1'20	51
1'30	53
1'40	52
1'50	48
1'60	0'0043
1'70	35
1'80	27
1'90	20
2'00	0'0013

Applied Constant:  $+0^d.0030$ .

1	2	1	2
$\epsilon$	Equation	$\epsilon$	Equation
$\alpha$	$\alpha$	$\alpha$	$\alpha$
0'00	0'0003	1'00	0'0004
0'05	0'0004	1'05	0'0005
0'10	5	1'10	5
0'15	5	1'15	5
0'20	5	1'20	5
0'25	5	1'25	4
0'30	0'0005	1'30	0'0004
0'35	4	1'35	3
0'40	4	1'40	2
0'45	3	1'45	2
0'50	2	1'50	1
0'55	0'0002	1'55	0'0001
0'60	1	1'60	1
0'65	1	1'65	1
0'70	1	1'70	2
0'75	1	1'75	3
0'80	0'0002	1'80	0'0003
0'85	2	1'85	4
0'90	3	1'90	5
0'95	4	1'95	5
1'00	0'0004	2'00	0'0005

Applied Constant:  $+0^d.0003$ .

The Equations of Tables VII, VIII to be applied to the entries of Table I, Column 2.

# SATELLITE I



## Tables

of the

Longitude on Jupiter's Orbit,  
Variation of the Radius Vector,  
and the Latitude



# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

IX Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10
Date	Mean Long.	A	B	C	D	E	F	G	H
	<sup>o</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
1850.0	306.02002	0.32284	2.085	0.222	0.457	0.285	223.78	451.85	205.04
1851.0	59.50226	2.20010	0.437	0.496	1.002	0.840	187.62	359.18	87.74
*1852.0	172.98450	0.55188	1.139	0.771	1.547	1.394	151.46	266.50	452.74
1853.0	129.95573	3.42914	0.491	0.275	1.323	1.179	116.31	174.83	336.44
1854.0	243.43797	1.78093	1.193	0.550	0.099	1.733	80.15	82.15	219.14
1855.0	356.92021	0.13272	1.895	0.824	0.645	0.518	43.99	447.15	101.83
*1856.0	110.40245	2.00997	0.247	1.099	1.190	1.073	7.84	354.48	466.83
1857.0	67.37368	1.36176	1.949	0.603	0.966	0.858	373.84	262.80	350.53
1858.0	180.85592	3.23901	0.301	0.878	1.511	1.412	337.68	170.13	233.23
1859.0	294.33815	1.59080	1.003	1.152	0.287	0.197	301.52	77.45	115.93
*1860.0	47.82039	3.46805	1.705	1.427	0.832	0.752	265.37	442.45	480.93
1861.0	4.79162	2.81984	1.057	0.931	0.608	0.537	230.21	350.78	364.63
1862.0	118.27386	1.17163	1.759	1.205	1.154	1.091	194.05	258.10	247.33
1863.0	231.75610	3.04889	0.111	1.480	1.699	1.645	157.89	165.43	130.02
*1864.0	345.23834	1.40067	0.813	1.755	0.475	0.430	121.74	72.75	12.72
1865.0	302.20957	0.75246	0.165	1.259	0.251	0.215	86.58	438.75	378.72
1866.0	55.69181	2.62972	0.867	1.533	0.796	0.770	50.42	346.08	261.42
1867.0	169.17405	0.98151	1.569	0.037	1.341	1.324	14.27	253.40	144.12
*1868.0	282.65629	2.85876	2.271	0.312	0.117	0.109	379.27	160.73	26.82
1869.0	239.62752	2.21055	1.623	1.587	1.663	1.663	344.11	69.06	392.82
1870.0	353.10976	0.56234	2.325	0.091	0.439	0.449	307.95	434.06	275.51
1871.0	106.59200	2.43959	0.677	0.365	0.984	1.003	271.80	341.38	158.21
*1872.0	220.07424	0.79138	1.379	0.640	1.529	1.557	235.64	248.71	40.91
1873.0	177.04547	0.14317	0.730	0.144	1.305	1.342	200.48	157.03	406.91
1874.0	290.52771	2.02042	1.433	0.419	0.081	0.127	164.33	64.36	289.61
1875.0	44.00994	0.37221	2.135	0.693	0.626	0.682	128.17	429.36	172.31
*1876.0	157.49218	2.24946	0.486	0.968	1.172	1.236	92.01	336.68	55.00
1877.0	114.46341	1.60125	2.188	0.472	0.948	1.021	56.85	245.01	421.00
1878.0	227.94565	3.47851	0.540	0.747	1.493	1.575	20.70	152.33	303.70
1879.0	341.42789	1.83029	1.242	1.021	0.269	0.360	385.70	59.66	186.40
*1880.0	94.91013	0.18208	1.944	1.296	0.814	0.915	349.54	424.66	69.10
1881.0	51.88136	3.05934	1.296	0.800	0.590	0.700	314.38	332.98	435.10
1882.0	165.36360	1.41113	1.998	1.075	1.135	1.254	278.23	240.31	317.80
1883.0	278.84584	3.28838	0.350	1.349	1.681	0.039	242.07	147.63	200.49
*1884.0	32.32808	1.64017	1.052	1.624	0.457	0.594	205.91	54.96	83.19
1885.0	349.29931	0.99196	0.404	1.128	0.233	0.379	170.76	420.96	449.19
1886.0	102.78155	2.86921	1.106	1.403	0.778	0.933	134.60	328.28	331.89
1887.0	216.26379	1.22100	1.808	1.677	1.323	1.487	98.44	235.61	214.59
*1888.0	329.74603	3.09825	0.160	0.181	0.099	0.272	62.29	142.93	97.29
1889.0	286.71726	2.45004	1.862	1.456	1.644	0.058	27.13	51.26	463.29
1890.0	40.19950	0.80183	0.214	1.730	0.421	0.612	392.13	416.26	345.99
1891.0	153.68173	2.67908	0.916	0.235	0.966	1.166	355.97	323.58	228.68
*1892.0	267.16397	1.03087	1.618	0.509	1.511	1.720	319.82	230.91	111.38
1893.0	224.13520	0.38266	0.970	0.013	1.287	1.505	284.66	139.23	477.38
1894.0	337.61744	2.25992	1.672	0.288	0.063	0.291	248.50	46.56	360.08
1895.0	91.09968	0.61170	0.024	0.562	0.608	0.845	212.34	411.56	242.78
*1896.0	204.58192	2.48896	0.726	0.837	1.153	1.399	176.19	318.88	125.48
1897.0	161.55315	1.84075	0.078	0.341	0.930	1.184	141.03	227.21	9.17
1898.0	275.03539	0.19254	0.780	0.616	1.475	1.739	104.87	134.53	374.17
1899.0	28.51763	2.06979	1.482	0.890	0.251	0.524	68.72	41.86	256.87
1900.0	141.99987	0.42158	2.184	1.165	0.796	1.078	32.56	406.86	139.57
Periods	...	3.52546	2.350	1.771	1.769	1.769	401.16	457.67	482.30

Constant subtracted from Column 2 : 0°6000.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

IX Values at Epoch of Mean Longitude and the Arguments

		3	4	5	6	7	8	9
I	J	K	L	M	N	O	P	Q
253 48	1850 0	1 7 601	1 698	0 68	<sup>d</sup> 1 11	<sup>d</sup> 1 3	0 8 8	3
13 89	1851 0	0 51449	0 728	1 99	1 68	1	0 6 1	0 0
12 30	1852 0	1 7211	1 5 5	146	49	0 7	0 415	0 61
378 3	1853 0	0 86059	1 555	1 76	9	0 5	3 4	43
257 71	1854 0	1 418 1	0 584	0 610	0 86	1 0	0 117	0 13
137 1	1855 0	0 0669	1 382	1 26	1 43	1 6	795	0 7
16 53	1856 0	0 76431	0 41	0 073	0 3	0 4	0 588	0 42
38 53	1857 0	0 55 79	441	1 690	0 03	0	0 497	0 24
61 95	1858 0	1 11041	1 39	0 537	0 60	7	0 291	0 8
141 35	1859 0	1 66803	0 268	1 153	1 17	1 3	0 084	0 53
20 76	*1860 0	45651	1 066	0 001	1 74	0 1	0 762	0 23
386 76	1861 0	0 4499	1 95	1 617	1 54	1 7	0 671	0 5
66 17	1862 0	0 80260	0 1 5	464	0 34	0 5	0 464	63
145 58	1863 0	1 3602	9 3	1 08	91	1 0	0 57	0 34
4 99	1864 0	0 1487	1 720	1 697	1 48	1 6	0 051	0 04
390 99	1865 0	1 7063	1 750	1 544	1 28	1 4	0 844	0 74
7 40	1866 0	0 49480	0 779	0 391	0 08	0 2	0 637	0 44
149 81	1867 0	1 05242	1 577	1 8	65	0 7	0 431	14
29	*1868 0	1 61004	6 7	1 6 4	1 2	1 3	0 24	73
395	1869 0	1 3985	0 636	1 471	1	1 1	0 133	0 55
74 63	1870 0	187	1 434	0 319	1 59	1 6	0 811	0 5
154 04	1871 0	0 7446	0 463	935	0 40	0 4	0 604	0 84
33 45	*1872 0	1 30 23	1 61	1 551	0 97	1 0	0 397	54
399 45	1873 0	1 9 71	1 90	1 399	0 77	0 8	0 307	0 36
278 86	1874 0	1 64833	0 3 0	0 46	1 34	1 3	0 100	0 06
158 27	1875 0	0 43681	1 118	86	0 14	0 1	0 778	0 65
37 68	1876 0	0 99443	147	1 478	0 71	7	571	0 35
403 68	1877 0	0 78 91	177	1 326	0 51	0 5	480	0 17
83 09	1878 0	1 34053	974	0 173	1 08	1	0 73	0 75
16 51	1879 0	0 1 9 1	0 004	0 789	1 65	1 6	0 067	0 46
41 92	*1880 0	0 68663	0 8 1	1 406	0 45	0 4	0 744	16
407 9	1881 0	0 47511	831	1 53	0 5	0	0 653	86
287 33	1882 0	1 03 73	1 629	1 0	82	0 8	447	0 56
166 74	1883 0	1 59 34	0 658	717	1 39	1 3	0 40	0 27
46 15	*1884 0	0 37883	1 456	1 333	0 19	0 1	0 033	0 85
41 15	1885 0	0 16731	1 485	1 180	1 76	1 7	0 8 7	0 67
291 56	1886 0	7 49	0 515	0 028	0 56	0 5	6 0	0 37
170 97	1887 0	1 28 54	1 31	644	1 13	1 0	0 413	0 8
5 38	*1888 0	0 7102	34	1 6	1 7	1 6	7	0 66
4 6 38	1889 0	6 864	0 37	1 1 8	1 50	1 4	116	0 48
95 19	1890 0	0 4171	1 169	1 724	0 31	0 2	0 794	0 18
175	1891 0	97474	0 199	0 571	0 88	0 7	0 587	0 77
54 61	*1892 0	1 53 36	996	1 187	1 45	1 3	0 380	0 47
4 61	1893 0	1 3 084	1 0 6	1 035	1 5	1 1	0 89	0 29
3 0	1894 0	1 932	0 056	1 651	0 5	1 6	0 083	0 0
79 43	1895 0	66694	0 853	0 499	0 6	0 4	0 76	0 58
58 84	1896 0	1 455	1 651	1 115	1 19	1 0	0 554	0 8
424 84	1897 0	1 013 3	1 68	0 96	0 99	0 8	0 463	0 10
304 5	1898 0	1 57065	0 710	1 578	1 56	1 3	0 256	0 69
183 66	1899 0	0 35913	1 507	0 426	0 36	0 1	0 049	0 39
63 7	1900 0	0 91675	0 537	1 04	93	0 7	0 727	0 09
485 59	P 10ds	1 76914	1 768	1 769	1 77	1 8	0 884	0 88

T f d th T L g t d l d t J p t O b t l t f C l m m t b p p l m t e l l y t h t i f T b l XII XXIV

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10
Date	Mean Long.	A	B	C	D	E	F	G	H
	°	d	d	d	d	d	d	d	d
1900·0	141·99987	0·42158	2·184	1·165	0·796	1·078	32·56	406·86	139·57
1901·0	255·48211	2·29883	0·536	1·440	1·341	1·632	397·56	314·19	22·27
1902·0	8·96435	0·65062	1·238	1·714	0·117	0·417	361·40	221·51	387·27
1903·0	122·44659	2·52787	1·940	0·218	0·662	0·972	325·25	128·84	269·97
*1904·0	235·92882	0·87966	0·292	0·493	1·208	1·526	289·09	36·16	152·66
1905·0	192·90006	0·23145	1·994	1·768	0·984	1·311	253·93	402·16	36·36
1906·0	306·38229	2·10870	0·346	0·272	1·529	0·096	217·78	309·49	401·36
1907·0	59·86453	0·46049	1·048	0·546	0·305	0·651	181·62	216·81	284·06
*1908·0	173·34677	2·33775	1·750	0·821	0·850	1·205	145·46	124·14	166·76
1909·0	130·31800	1·68954	1·102	0·325	0·626	0·990	110·31	32·46	50·46
1910·0	243·80024	0·04132	1·804	0·600	1·172	1·544	74·15	397·46	415·46
1911·0	357·28248	1·91858	0·156	0·874	1·717	0·329	37·99	304·79	298·15
*1912·0	110·76472	0·27037	0·858	1·149	0·493	0·884	1·84	212·11	180·85
1913·0	67·73595	3·14762	0·209	0·653	0·269	0·669	367·84	120·44	64·55
1914·0	181·21819	1·49941	0·912	0·928	0·814	1·223	331·68	27·76	429·55
1915·0	294·70043	3·37666	1·614	1·202	1·359	0·008	295·52	392·76	312·25
*1916·0	48·18267	1·72845	2·316	1·477	0·135	0·562	259·37	300·09	194·95
1917·0	5·15390	1·08024	1·668	0·981	1·681	0·348	224·21	208·41	78·65
1918·0	118·63614	2·95749	0·019	1·255	0·457	0·902	188·05	115·74	443·65
1919·0	232·11838	1·30928	0·721	1·530	1·002	1·456	151·90	23·06	326·34
*1920·0	345·60061	3·18654	1·424	0·034	1·547	0·241	115·74	388·06	209·04
1921·0	302·57185	2·53832	0·775	1·309	1·323	0·026	80·58	296·39	92·74
1922·0	56·05408	0·89011	1·477	1·583	0·099	0·581	44·42	203·71	457·74
1923·0	169·53632	2·76737	2·180	0·087	0·644	1·135	8·27	111·04	340·44
*1924·0	283·01856	1·11916	0·531	0·362	1·190	1·689	373·27	18·36	223·14
1925·0	239·98979	0·47095	2·233	1·637	0·966	1·474	338·11	384·36	106·83
1926·0	353·47203	2·34820	0·585	0·141	1·511	0·259	301·95	291·69	471·83
1927·0	106·95427	0·69999	1·287	0·415	0·287	0·814	265·79	199·01	354·53
*1928·0	220·43651	2·57724	1·989	0·690	0·832	1·368	229·64	106·34	237·23
1929·0	177·40774	1·92903	1·341	0·194	0·608	1·153	194·48	14·66	120·93
1930·0	290·88998	0·28082	2·043	0·469	1·153	1·707	158·32	379·66	3·63
1931·0	44·37222	2·15807	0·395	0·743	1·699	0·493	122·17	286·99	368·63
*1932·0	157·85446	0·50986	1·097	1·018	0·475	1·047	86·01	194·32	251·32
1933·0	114·82569	3·38711	0·449	0·522	0·251	0·832	50·85	102·64	135·02
1934·0	228·30793	1·73890	1·151	0·797	0·796	1·386	14·70	9·97	17·72
1935·0	341·79017	0·09069	1·853	1·071	1·341	0·171	379·70	374·97	382·72
*1936·0	95·27240	1·96795	0·205	1·346	0·117	0·726	343·54	282·29	265·42
1937·0	52·24364	1·31973	1·907	0·850	1·662	0·511	308·38	190·62	149·12
1938·0	165·72587	3·19699	0·259	1·125	0·438	1·065	272·23	97·94	31·81
1939·0	279·20811	1·54878	0·961	1·399	0·984	1·619	236·07	5·27	396·81
*1940·0	32·69035	3·42603	1·663	1·674	1·529	0·405	199·91	370·27	279·51
1941·0	349·66158	2·77782	1·015	1·178	1·305	0·190	164·75	278·59	163·21
1942·0	103·14382	1·12961	1·717	1·453	0·081	0·744	128·60	185·92	45·91
1943·0	216·62606	3·00686	0·069	1·727	0·626	1·298	92·44	93·24	410·91
*1944·0	330·10830	1·35865	0·771	0·231	1·171	0·083	56·28	0·57	293·61
1945·0	287·07953	0·71044	0·123	1·506	0·947	1·638	21·13	366·57	177·31
1946·0	40·56177	2·58769	0·825	0·010	1·493	0·423	386·13	273·89	60·00
1947·0	154·04401	0·93948	1·527	0·285	0·269	0·977	349·97	181·22	425·00
*1948·0	267·52625	2·81673	2·229	0·559	0·814	1·531	313·81	88·54	307·70
1949·0	224·49748	2·16852	1·581	0·063	0·590	1·316	278·66	454·54	191·40
1950·0	337·97972	0·52031	2·283	0·338	1·135	0·102	242·50	361·87	74·10
Periods	...	3·52546	2·350	1·771	1·769	1·769	401·16	457·67	482·30

Constant subtracted from Column 2: 0°·60000.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values at Epoch of Mean Longitude and the Arguments

		3	4	5	6	7	8	9
I	J	K	L	M	N	O	P	Q
63 7	1900 0	091675	537	<sup>d</sup> 1 04	093	07	1 7 7	1 0 09
428 07	1901 0	1 47437	1 335	1 658	1 50	1 3	5	0 68
3 7 48	1902 0	6 85	364	0 5 6	0 30	1	0 314	0 38
186 89	1903 0	0 8 047	1 162	1 1	0 87	0 6	107	0 08
66 3	*1904 0	1 378 8	191	1 738	1 44	1	0 785	0 67
43 3	1905 0	1 16656	0 21	1 586	1 4	1 0	0 694	0 49
311 71	1906 0	1 7 418	1 18	0 433	0 04	1 5	0 487	19
191 1	1907 0	0 51 66	0 48	1 049	0 61	0 3	0 80	78
7 53	1908 0	1 70 8	0 846	1 665	18	0 9	0 74	0 48
436 53	1909 0	85876	0 875	1 513	0 98	0 7	867	0 30
315 94	1910 0	1 1638	1 673	0 360	1 55	1	0 661	0 0
19 35	1911 0	486	0 702	0 976	0 36	0 0	454	0 58
74 76	1912 0	76248	1 50	1 593	93	0 6	0 47	0 29
44 76	1913 0	0 55 96	1 5 9	1 440	0 73	4	0 156	0 10
3 0 17	1914 0	1 10858	559	0 87	1 30	0 9	0 834	0 69
199 58	1915 0	1 66619	1 357	0 9 4	0 10	1 5	6 7	0 39
78 99	*1916 0	45468	0 386	1 5 0	67	0 3	0 4 1	0 10
444 99	1917 0	0 4316	416	1 367	0 47	0 1	0 330	0 80
324 40	1918 0	0 80 77	1 13	0 15	1 04	0 6	0 1 3	5
2 3 81	1919 0	1 35839	0 243	0 831	1 61	1	801	0 0
83	1920 0	0 14687	1 041	1 447	0 41	0 0	0 594	0 79
449 2	1921 0	1 70449	1 070	1 95	0 1	1 6	0 503	0 61
3 8 63	1922 0	0 49 97	0 100	0 14	0 78	0 4	0 296	0 31
2 8 5	1923 0	1 5059	897	758	1 35	0 9	0 90	0 01
87 46	1924 0	1 608 1	1 695	1 374	0 15	1 5	767	60
453 46	1925 0	1 39669	1 724	1 2	1 7	1 3	0 677	0 4
332 87	1926 0	18517	754	0 69	0 52	1	0 470	0 12
212 28	1927 0	0 74 79	1 52	685	1 09	6	0 63	0 71
91 69	*1928 0	1 30040	0 581	1 30	1 66	1 2	0 057	0 41
457 69	1929 0	1 08888	0 611	1 149	1 46	1 0	0 850	0 23
337	1930 0	1 6465	1 408	1 765	7	1 5	0 643	0 81
16 51	1931 0	0 43498	438	0 613	0 84	3	0 437	0 5
95 9	1932 0	0 99 60	1 35	1 29	1 41	0 9	230	0 22
461 9	1933 0	0 78108	1 65	1 076	1 1	0 7	139	0 04
341 33	1934 0	1 33870	0 295	1 693	0 1	1 2	817	0 62
0 74	1935 0	0 1 718	1 09	0 540	0 58	0	0 610	0 3
100 15	*1936 0	0 6848	0 1	1 156	1 15	0 6	403	0 03
466 15	1937 0	0 473 8	0 151	1 004	0 95	0 4	0 312	0 73
345 56	1938 0	1 3090	949	1 6 0	1 51	9	0 106	0 43
2 4 97	1939 0	1 58851	1 747	467	0 32	1 5	0 783	13
104 38	1940 0	37699	0 776	1 083	89	0 3	0 577	0 7
47 38	1941 0	0 16547	806	0 931	0 69	0 1	0 486	0 54
349 79	1942 0	723 9	1 603	1 547	1 6	0 7	0 79	0 4
9 2	1943 0	1 8071	0 633	394	0 6	1 2	0 73	0 83
108 61	1944 0	0 6919	1 430	1 011	0 63	0	750	0 53
474 61	1945 0	1 6 681	1 460	0 858	0 43	1 6	0 659	0 35
354 01	1946 0	0 41529	0 490	1 474	1 0	0 4	0 453	0 05
233 43	1947 0	0 97 91	1 287	0 3 2	1 57	0 9	0 246	0 64
11 84	1948 0	1 53 53	0 317	938	0 37	1 5	0 39	0 34
478 84	1949 0	1 319 1	0 346	0 785	18	1 3	0 833	0 16
358 25	1950 0	10749	1 144	1 402	0 75	0 1	626	0 74
485 59	P m ds	1 76914	1 768	1 769	1 77	1 8	0 884	0 88

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# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10
Date	Mean Long.	A	B	C	D	E	F	G	H
	°	d	d	d	d	d	d	d	d
1950·0	337°97972	0°52031	2°283	0°338	1°135	0°102	242°50	361°87	74°10
1951·0	91°46196	2°39757	0°635	0°612	1°680	0°656	206°34	269°19	439°10
*1952·0	204°94420	0°74935	1°337	0°887	0°456	1°210	170°19	176°52	321°80
1953·0	161°91543	0°10114	0°688	0°391	0°232	0°995	135°03	84°84	205°49
1954·0	275°39767	1°97840	1°391	0°666	0°778	1°550	98°87	449°84	88°19
1955·0	28°87990	0°33019	2°093	0°940	1°323	0°335	62°72	357°17	453°19
*1956·0	142°36214	2°20744	0°444	1°215	0°099	0°889	26°56	264°49	335°89
1957·0	99°33337	1°55923	2°147	0°719	1°644	0°674	392°56	172°82	219°59
1958·0	212°81561	3°43648	0°498	0°994	0°420	1°228	356°40	80°14	102°29
1959·0	326°29785	1°78827	1°200	1°268	0°965	0°013	320°24	445°14	467°29
*1960·0	79°78009	0°14006	1°903	1°543	1°511	0°568	284°09	352°47	349°98
1961·0	36°75132	3°01731	1°254	1°047	1°287	0°353	248°93	260°79	233°68
1962·0	150°23356	1°36910	1°956	1°322	0°063	0°907	212°77	168°12	116°38
1963·0	263°71580	3°24635	0°308	1°596	0°608	1°461	176°62	75°45	481°38
*1964·0	17°19804	1°59814	1°010	0°100	1°153	0°247	140°46	440°45	364°08
1965·0	334°16927	0°94993	0°362	1°375	0°929	0°032	105°30	348°77	247°78
1966·0	87°65151	2°82719	1°064	1°650	1°474	0°586	69°15	256°10	130°48
1967·0	201°13375	1°17898	1°766	0°154	0°250	1°140	32°99	163°42	13°17
*1968·0	314°61599	3°05623	0°118	0°428	0°796	1°695	397°99	70°75	378°17
1969·0	271°58722	2°40802	1°820	1°703	0°572	1°480	362°83	436°75	261°87
1970·0	25°06946	0°75981	0°172	0°207	1°117	0°265	326°68	344°07	144°57
1971·0	138°55169	2°63706	0°874	0°482	1°662	0°819	290°52	251°40	27°27
*1972·0	252°03393	0°98885	1°576	0°756	0°438	1°373	254°36	158°72	392°27
1973·0	209°00516	0°34064	0°928	0°260	0°214	1°158	219°20	67°05	275°97
1974·0	322°48740	2°21789	1°630	0°535	0°759	1°713	183°05	432°05	158°66
1975·0	75°96964	0°56968	2°332	0°810	1°305	0°498	146°89	339°37	41°36
*1976·0	189°45188	2°44693	0°684	1°084	0°081	1°052	110°73	246°70	406°36
1977·0	146°42311	1°79872	0°036	0°588	1°626	0°837	75°58	155°02	290°06
1978·0	259°90535	0°15051	0°738	0°863	0°402	1°392	39°42	62°35	172°76
1979·0	13°38759	2°02776	1°440	1°137	0°947	0°177	3°26	427°35	55°46
*1980·0	126°86983	0°37955	2°142	1°412	1°492	0°731	368°26	334°67	420°46
1981·0	83°84106	3°25681	1°494	0°916	1°268	0°516	333°11	243°00	304°15
1982·0	197°32330	1°60860	2°196	1°191	0°044	1°070	296°95	150°32	186°85
1983·0	310°80554	3°48585	0°548	1°465	0°590	1°625	260°79	57°65	69°55
*1984·0	64°28778	1°83764	1°250	1°740	1°135	0°410	224°64	422°65	434°55
1985·0	21°25901	1°18943	0°601	1°244	0°911	0°195	189°48	330°97	318°25
1986·0	134°74125	3°06668	1°304	1°519	1°456	0°749	153°32	238°30	200°95
1987·0	248°22348	1°41847	2°006	0°023	0°232	1°304	117°16	145°62	83°64
*1988·0	1°70572	3°29572	0°358	0°297	0°777	0°089	81°01	52°95	448°64
1989·0	318°67695	2°64751	2°060	1°572	0°553	1°643	45°85	418°95	332°34
1990·0	72°15919	0°99930	0°412	0°076	1°099	0°428	9°69	326°27	215°04
1991·0	185°64143	2°87655	1°114	0°351	1°644	0°982	374°69	233°60	97°74
*1992·0	299°12367	1°22834	1°816	0°625	0°420	1°537	338°54	140°92	462°74
1993·0	256°09490	0°58013	1°168	0°129	0°196	1°322	303°38	49°25	346°44
1994·0	9°57714	2°45738	1°870	0°404	0°741	0°107	267°22	414°25	229°14
1995·0	123°05938	0°80917	0°221	0°679	1°286	0°661	231°07	321°58	111°83
*1996·0	236°54162	2°68643	0°924	0°953	0°062	1°215	194°91	228°90	476°83
1997·0	193°51285	2°03822	0°275	0°457	1°608	1°001	159°75	137°23	360°53
1998·0	306°99509	0°39001	0°977	0°732	0°384	1°555	123°60	44°55	243°23
1999·0	60°47733	2°26726	1°680	1°007	0°929	0°340	87°44	409°55	125°93
*2000·0	173°95957	0°61905	0°031	1°281	1°474	0°894	51°28	316°88	8°63
Periods	...	3°52546	2°350	1°771	1°769	1°769	401°16	457°67	482°30

Constant subtracted from Column 2: 0°60000.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values at Epoch of Mean Longitude and the Arguments

		3	4	5	6	7	8	9
I	J	K	L	M	N	O	P	Q
<sup>d</sup> 358 5	<b>1950 0</b>	0 10749	1 144	1 402	0 75	0 1	0 626	0 74
37 66	<b>1951 0</b>	0 66510	173	249	1 3	0 6	0 419	0 45
117 7	<b>1952 0</b>	1 72	0 971	0 865	0 1	1 2	0 213	0 15
483 07	<b>1953 0</b>	1 1120	1 01	0 713	1 69	1 0	0 122	0 85
36 48	<b>1954 0</b>	1 56882	0 030	1 3 9	0 49	1 5	0 799	0 55
41 89	<b>1955 0</b>	0 35730	0 8 8	0 176	1 06	0 3	0 593	0 6
121 3	<b>*1956 0</b>	91492	1 625	0 79	1 63	0 9	0 386	0 84
1 71	<b>1957 0</b>	0 70340	1 655	640	1 43	0 7	0 295	0 66
366 71	<b>1958 0</b>	1 261 2	0 685	1 56	0 23	1	0 088	0 36
46 12	<b>1959 0</b>	04950	1 48	0 104	0 80	0 0	0 766	0 06
125 53	<b>1960 0</b>	607	0 51	0 7 0	1 37	0 6	0 559	65
5 94	<b>1961 0</b>	0 3956	0 541	0 567	1 17	0 4	0 469	0 47
370 94	<b>1962 0</b>	0 953 1	1 339	1 183	1 74	0 9	0 26	0 17
250 35	<b>1963 0</b>	1 51083	0 368	0 031	0 54	1 5	0 055	0 76
1 976	<b>*1964 0</b>	0 9931	1 166	647	1 11	0 3	0 733	0 46
1 17	<b>1965 0</b>	0 08779	1 196	0 494	0 91	1	0 642	0 28
375 17	<b>1966 0</b>	0 64541	0 5	1 111	1 48	0 7	0 435	0 87
54 59	<b>1967 0</b>	1 03 3	1 023	1 727	0 8	1 2	0 2 9	0 57
134 0	<b>1968 0</b>	1 76065	0 052	0 574	0 85	0 0	0 022	0 27
14 41	<b>1969 0</b>	1 54913	0 082	0 4 2	0 66	1 6	0 815	0 09
379 41	<b>1970 0</b>	33761	879	1 038	1 3	0 4	0 609	0 67
58 8	<b>1971 0</b>	0 895 3	1 677	1 654	3	0 9	0 40	0 38
138 3	<b>*1972 0</b>	1 45 84	0 7 7	0 502	60	1 5	0 195	0 08
18 64	<b>1973 0</b>	1 413	0 736	0 349	0 40	1 3	0 104	78
383 64	<b>1974 0</b>	0 298	1 534	0 965	0 97	0 1	0 78	0 48
263 5	<b>1975 0</b>	0 58 4	0 563	1 581	1 54	6	575	0 19
14 46	<b>*1976 0</b>	1 14504	1 361	0 4 9	0 34	1	0 369	0 77
87	<b>1977 0</b>	9335	1 390	0 76	0 14	1 0	0 78	0 59
387 87	<b>1978 0</b>	1 49114	42	0 892	0 71	1 5	0 071	0 9
267 8	<b>1979 0</b>	0 796	1 18	1 509	1 8	0 3	0 749	0
146 69	<b>*1980 0</b>	837 4	0 47	0 356	0 08	0 9	0 54	0 58
7 1	<b>1981 0</b>	0 62572	0 77	3	1 65	0 7	0 451	0 40
39 10	<b>1982 0</b>	1 18334	1 74	0 82	0 45	1 2	0 45	0 10
271 51	<b>1983 0</b>	1 74 95	0 104	1 436	1 02	0 0	0 038	69
15 9	<b>*1984 0</b>	0 52943	0 90	83	1 59	6	0 716	0 39
31 33	<b>1985 0</b>	0 31791	931	0 131	1 39	0 4	0 625	0 21
396 33	<b>1986 0</b>	87553	1 7 9	0 747	0 19	1 0	0 418	0 80
75 74	<b>1987 0</b>	43315	0 758	1 363	0 76	1 5	0 11	0 50
155 15	<b>1988 0</b>	163	1 556	0 11	1 33	0 3	0 005	0 20
35 56	<b>1989 0</b>	1011	1 585	0 058	1 14	1	798	0 02
4 56	<b>1990 0</b>	0 56773	0 615	674	1 71	0 7	591	0 61
279 97	<b>1991 0</b>	1 12535	1 413	1 9	51	1 2	0 385	0 31
159 38	<b>1992 0</b>	1 68 97	0 44	138	1 08	0 0	0 178	0 01
39 79	<b>1993 0</b>	1 47145	472	1 754	0 88	1 6	0 087	0 71
4 479	<b>1994 0</b>	5993	1 69	0 601	1 45	0 4	0 765	0 42
84 0	<b>1995 0</b>	0 81754	0 299	1 18	0 5	0 9	0 558	0 12
163 61	<b>1996 0</b>	1 37516	1 096	0 65	0 8	1 5	0 35	0 70
44	<b>1997 0</b>	1 16364	1 1 6	1 681	0 6	1 3	0 61	0 52
4 9	<b>1998 0</b>	1 7 1 6	0 156	0 529	1 19	1	0 54	0 2
88 43	<b>1999 0</b>	0 5 974	953	1 145	1 76	0 6	0 73	0 81
167 84	<b>*2000 0</b>	1 06736	1 751	1 761	0 56	1 2	0 5 5	0 51
485 59	P ods	1 76914	1 768	1 769	1 77	1 8	0 884	0 88

T n d t l T L g i t d d d t J p t O b t t h t f C l m m t b p p l t d b y t h q t i f T b l X I I X X I V

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

### X      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8
Day	Mean Long.	A	B	C	D	E	F—I
	°	d	d	d	d	d	d
<b>January 1</b>	203°48899	1°00000	1°000	1°000	1°000	1°000	1°00
<b>2</b>	46°97798	2°00000	2°000	0°229	0°231	0°231	2°00
<b>3</b>	250°46698	3°00000	0°650	1°229	1°231	1°231	3°00
<b>4</b>	93°95597	0°47454	1°650	0°459	0°462	0°462	4°00
<b>5</b>	297°44496	1°47454	0°299	1°459	1°462	1°462	5°00
<b>6</b>	140°93395	2°47454	1°299	0°688	0°692	0°693	6°00
<b>7</b>	344°42295	3°47454	2°299	1°688	1°692	1°693	7°00
<b>8</b>	187°91194	0°94907	0°949	0°918	0°923	0°923	8°00
<b>9</b>	31°40093	1°94907	1°949	0°147	0°154	0°154	9°00
<b>10</b>	234°88992	2°94907	0°599	1°147	1°154	1°154	10°00
<b>11</b>	78°37892	0°42361	1°599	0°377	0°385	0°385	11°00
<b>12</b>	281°86791	1°42361	0°248	1°377	1°385	1°385	12°00
<b>13</b>	125°35690	2°42361	1°248	0°606	0°616	0°616	13°00
<b>14</b>	328°84589	3°42361	2°248	1°606	1°616	1°616	14°00
<b>15</b>	172°33489	0°89815	0°898	0°836	0°846	0°847	15°00
<b>16</b>	15°82388	1°89815	1°898	0°065	0°077	0°078	16°00
<b>17</b>	219°31287	2°89815	0°548	1°065	1°077	1°078	17°00
<b>18</b>	62°80186	0°37268	1°548	0°295	0°308	0°308	18°00
<b>19</b>	266°29086	1°37268	0°198	1°295	1°308	1°308	19°00
<b>20</b>	109°77985	2°37268	1°198	0°524	0°539	0°539	20°00
<b>21</b>	313°26884	3°37268	2°198	1°524	1°539	1°539	21°00
<b>22</b>	156°75783	0°84722	0°847	0°754	0°770	0°770	22°00
<b>23</b>	0°24683	1°84722	1°847	1°754	0°000	0°001	23°00
<b>24</b>	203°73582	2°84722	0°497	0°983	1°000	1°001	24°00
<b>25</b>	47°22481	0°32176	1°497	0°213	0°231	0°232	25°00
<b>26</b>	250°71380	1°32176	0°147	1°213	1°231	1°232	26°00
<b>27</b>	94°20280	2°32176	1°147	0°442	0°462	0°463	27°00
<b>28</b>	297°69179	3°32176	2°147	1°442	1°462	1°463	28°00
<b>29</b>	141°18078	0°79629	0°796	0°672	0°693	0°694	29°00
<b>30</b>	344°66977	1°79629	1°796	1°672	1°693	1°694	30°00
<b>31</b>	188°15877	2°79629	0°446	0°901	0°924	0°924	31°00
<b>February 1</b>	31°64776	0°27083	1°446	0°131	0°154	0°155	32°00
<b>2</b>	235°13675	1°27083	0°096	1°131	1°154	1°155	33°00
<b>3</b>	78°62574	2°27083	1°096	0°360	0°385	0°386	34°00
<b>4</b>	282°11474	3°27083	2°096	1°360	1°385	1°386	35°00
<b>5</b>	125°60373	0°74536	0°745	0°590	0°616	0°617	36°00
<b>6</b>	329°09272	1°74536	1°745	1°590	1°616	1°617	37°00
<b>7</b>	172°58171	2°74536	0°395	0°819	0°847	0°848	38°00
<b>8</b>	16°07070	0°21990	1°395	0°049	0°078	0°079	39°00
<b>9</b>	219°55970	1°21990	0°045	1°049	1°078	1°079	40°00
<b>10</b>	63°04869	2°21990	1°045	0°278	0°308	0°309	41°00
<b>11</b>	266°53768	3°21990	2°045	1°278	1°308	1°309	42°00
<b>12</b>	110°02667	0°69444	0°694	0°508	0°539	0°540	43°00
<b>13</b>	313°51567	1°69444	1°694	1°508	1°539	1°540	44°00
<b>14</b>	157°00466	2°69444	0°344	0°737	0°770	0°771	45°00
<b>15</b>	0°49365	0°16897	1°344	1°737	0°001	0°002	46°00
<b>16</b>	203°98264	1°16897	2°344	0°967	1°001	1°002	47°00
<b>17</b>	47°47164	2°16897	0°994	0°196	0°232	0°233	48°00
<b>18</b>	250°96063	3°16897	1°994	1°196	1°232	1°233	49°00
<b>19</b>	94°44962	0°64351	0°644	0°426	0°462	0°464	50°00
<b>20</b>	297°93861	1°64351	1°644	1°426	1°462	1°464	51°00
<b>21</b>	141°42761	2°64351	0°293	0°655	0°693	0°695	52°00
<b>22</b>	344°91660	0°11805	1°293	1°655	1°693	1°695	53°00

In Leap Year diminish the date in Columns 1, 9, by 1 day after Feb. 28

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

### X Motions of Mean Longitude and the Arguments for Days

9				3	4	5	6
Day	J	K	L	M	N O	P	Q
<b>January</b>					1		
1	0 003	1 0000	1 00	1 000	1 0	0 116	0 11
2	05	0 3086	3	0 231	3	0 31	0 23
3	0 008	1 3086	1 23	1 31	1 3	0 347	0 35
4	0 011	0 4617	0 464	46	0 46	463	0 46
5	0 14	1 4617	1 464	46	1 46	0 579	58
6	0 16	0 69259	0 696	0 693	0 69	0 694	0 69
7	0 019	1 69 59	1 696	1 693	1 69	0 810	0 81
8	0 022	9 345	9 8	925	9	0 042	0 04
9	0 05	0 15431	0 16	0 156	0 15	157	16
10	0 027	1 15431	1 160	1 156	1 15	73	0 7
11	0 030	0 38517	0 392	0 387	0 39	0 389	0 39
12	0 033	1 38517	1 39	1 387	1 39	0 5 4	0 5
13	0 036	0 61604	0 6 4	0 618	62	0 6	6
14	0 038	1 61604	1 624	1 618	1 62	0 736	0 73
15	0 041	84690	856	0 849	0 85	0 852	0 85
16	0 044	0 07776	0 88	0 080	0 08	0 083	0 8
17	0 047	1 07776	1 088	1 08	1 8	0 199	0 19
18	49	0 3086	0 320	0 311	31	0 314	31
19	0 052	1 30862	1 320	1 311	1 31	0 43	0 43
20	55	53948	0 55	0 543	0 54	546	54
21	0 58	1 53948	1 552	1 543	1 54	0 66	0 66
22	60	0 77035	0 784	0 774	0 77	0 777	0 77
23	0 063	0 00121	0 016	0 005	0 00	0 0 9	00
24	0 066	1 00121	1 016	1 05	1 0	0 1 5	0 1
25	68	0 3 07	0 248	0 236	0 3	0 40	0 3
26	71	1 3 7	1 48	1 36	1 3	0 356	0 35
27	0 74	46293	0 480	0 467	46	0 47	0 47
28	0 77	1 46 93	1 480	1 467	1 46	587	0 58
29	0 79	0 69380	0 71	0 698	0 69	0 703	0 7
30	08	1 69380	1 71	1 698	1 69	0 819	0 81
31	0 085	0 9 466	0 944	0 929	0 93	51	0 04
<b>February</b>							
1	0 088	5552	176	0 161	0 16	0 166	0 16
2	0 090	1 1555	1 176	1 161	1 16	0 282	0 27
3	0 093	38638	0 4 9	0 39	0 39	0 397	0 39
4	0 096	1 38638	1 409	1 392	1 39	513	0 50
5	0 099	0 617 4	641	0 6 3	0 62	0 6 9	0 6
6	0 101	1 61724	1 641	1 6 3	1 62	0 745	0 74
7	0 104	0 84811	0 873	0 854	0 85	860	85
8	0 107	7897	0 1 5	0 085	0 08	09	0 08
9	0 11	1 07897	1 105	1 085	1 08	208	0 20
10	0 11	30983	337	0 316	0 31	0 3 3	0 32
11	0 115	1 3 983	1 337	1 316	1 31	439	0 43
12	0 118	0 54 69	569	0 548	0 54	555	54
13	0 1 1	1 54069	1 569	1 548	1 54	0 67	0 66
14	0 1 3	77155	0 8 1	0 779	0 77	0 786	0 78
15	0 126	0 00242	0 33	0 10	0 00	0 018	0 1
16	0 129	1 4	1 033	1 010	1 00	0 133	0 12
17	0 13	0 33 8	0 65	0 41	0 23	0 49	0 4
18	0 134	1 33 8	1 65	1 41	1 3	0 365	0 35
19	0 137	46414	0 497	0 47	0 47	0 480	0 47
20	0 140	1 46414	1 497	1 472	1 47	0 596	0 58
21	0 142	0 69500	0 7 9	0 703	0 70	0 712	0 70
22	0 145	1 69500	1 7 9	1 703	1 70	0 828	0 81

I L p Y d m i l t h d t i C l m g by d y ft F b 8



# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8
Day	Mean Long.	A	B	C	D	E	F—I
	°	d	d	d	d	d	d
<b>February 23</b>	188°40559	1°11805	2°293	0°885	0°924	0°925	54°00
<b>24</b>	31°89458	2°11805	0°943	0°114	0°155	0°156	55°00
<b>25</b>	235°38358	3°11805	1°943	1°114	1°155	1°156	56°00
<b>26</b>	78°87257	0°59258	0°593	0°344	0°386	0°387	57°00
<b>27</b>	282°36156	1°59258	1°593	1°344	1°386	1°387	58°00
<b>March 28</b>	125°85055	2°59258	0°242	0°573	0°616	0°618	59°00
<b>1</b>	329°33955	0°06712	1°242	1°573	1°616	1°618	60°00
<b>2</b>	172°82854	1°06712	2°242	0°803	0°847	0°849	61°00
<b>3</b>	16°31753	2°06712	0°892	0°032	0°078	0°080	62°00
<b>4</b>	219°80652	3°06712	1°892	1°032	1°078	1°080	63°00
<b>5</b>	63°29552	0°54166	0°542	0°262	0°309	0°310	64°00
<b>6</b>	266°78451	1°54166	1°542	1°262	1°309	1°310	65°00
<b>7</b>	110°27350	2°54166	0°191	0°491	0°540	0°541	66°00
<b>8</b>	313°76249	0°01619	1°191	1°491	1°540	1°541	67°00
<b>9</b>	157°25149	1°01619	2°191	0°721	0°770	0°772	68°00
<b>10</b>	0°74048	2°01619	0°841	1°721	0°001	0°003	69°00
<b>11</b>	204°22947	3°01619	1°841	0°950	1°001	1°003	70°00
<b>12</b>	47°71846	0°49073	0°491	0°180	0°232	0°234	71°00
<b>13</b>	251°20746	1°49073	1°491	1°180	1°232	1°234	72°00
<b>14</b>	94°69645	2°49073	0°140	0°409	0°463	0°465	73°00
<b>15</b>	298°18544	3°49073	1°140	1°409	1°463	1°465	74°00
<b>16</b>	141°67443	0°96527	2°140	0°638	0°694	0°696	75°00
<b>17</b>	345°16343	1°96527	0°790	1°638	1°694	1°696	76°00
<b>18</b>	188°65242	2°96527	1°790	0°868	0°924	0°926	77°00
<b>19</b>	32°14141	0°43980	0°440	0°097	0°155	0°157	78°00
<b>20</b>	235°63040	1°43980	1°440	1°097	1°155	1°157	79°00
<b>21</b>	79°11939	2°43980	0°089	0°327	0°386	0°388	80°00
<b>22</b>	282°60839	3°43980	1°089	1°327	1°386	1°388	81°00
<b>23</b>	126°09738	0°91434	2°089	0°556	0°617	0°619	82°00
<b>24</b>	329°58637	1°91434	0°739	1°556	1°617	1°619	83°00
<b>25</b>	173°07536	2°91434	1°739	0°786	0°848	0°850	84°00
<b>26</b>	16°56436	0°38887	0°389	0°015	0°079	0°081	85°00
<b>27</b>	220°05335	1°38887	1°389	1°015	1°079	1°081	86°00
<b>28</b>	63°54234	2°38887	0°039	0°245	0°309	0°311	87°00
<b>29</b>	267°03133	3°38887	1°039	1°245	1°309	1°311	88°00
<b>April 30</b>	110°52033	0°86341	2°039	0°474	0°540	0°542	89°00
<b>31</b>	314°00932	1°86341	0°688	1°474	1°540	1°542	90°00
<b>1</b>	157°40831	2°86341	1°688	0°704	0°771	0°773	91°00
<b>2</b>	0°98730	0°33795	0°338	1°704	0°002	0°004	92°00
<b>3</b>	204°47630	1°33795	1°338	0°933	1°002	1°004	93°00
<b>4</b>	47°96529	2°33795	2°338	0°163	0°233	0°235	94°00
<b>5</b>	251°45428	3°33795	0°988	1°163	1°233	1°235	95°00
<b>6</b>	94°94327	0°81248	1°988	0°392	0°463	0°466	96°00
<b>7</b>	298°43227	1°81248	0°637	1°392	1°463	1°466	97°00
<b>8</b>	141°92126	2°81248	1°637	0°622	0°694	0°697	98°00
<b>9</b>	345°41025	0°28702	0°287	1°622	1°694	1°697	99°00
<b>10</b>	188°89924	1°28702	1°287	0°851	0°925	0°927	100°00
<b>11</b>	32°38824	2°28702	2°287	0°081	0°156	0°158	101°00
<b>12</b>	235°87723	3°28702	0°937	1°081	1°156	1°158	102°00
<b>13</b>	79°36622	0°76156	1°937	0°310	0°387	0°389	103°00
<b>14</b>	282°85521	1°76156	0°586	1°310	1°387	1°389	104°00
<b>15</b>	126°34421	2°76156	1°586	0°540	0°617	0°620	105°00
<b>16</b>	329°83320	0°23609	0°236	1°540	1°617	1°620	106°00

In Leap Year diminish the date in Columns 1, 9, by 1 day after Feb. 28.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

9				3	4	5	6
Day	J	K	L	M	N O	P	Q
	y	l		a	d	d	l
<b>February 23</b>	0 148	0 9 587	0 961	0 934	0 93	0 59	0 05
<b>24</b>	0 151	0 15673	0 193	0 166	0 16	0 175	0 16
<b>25</b>	153	1 15673	1 93	1 166	1 16	0 291	28
<b>26</b>	0 156	38759	0 425	397	0 39	0 406	0 39
<b>27</b>	0 159	1 38759	1 425	1 397	1 39	0 522	0 51
<b>28</b>	0 16	0 61845	0 657	0 6 8	0 6	0 638	62
<b>March 1</b>	0 164	1 61845	1 657	1 628	1 6	0 753	0 74
<b>2</b>	0 167	0 84931	889	0 859	0 85	0 869	0 85
<b>3</b>	0 170	0 8018	0 1 1	0 09	0 08	0 101	0 09
<b>4</b>	0 173	1 08018	1 121	1 90	1 08	0 216	20
<b>5</b>	175	3 1104	0 353	0 321	3 1	0 33	0 3
<b>6</b>	178	1 31104	1 353	1 321	1 31	0 448	43
<b>7</b>	0 181	0 54190	0 585	0 55	0 54	0 563	0 55
<b>8</b>	0 184	1 54190	1 585	1 55	1 54	0 679	0 66
<b>9</b>	0 186	0 77 76	817	784	0 78	0 795	0 78
<b>10</b>	0 189	0 363	0 049	0 015	0 01	0 0 6	0 01
<b>11</b>	0 19	1 00363	1 49	1 015	1 01	0 14	0 1
<b>12</b>	0 195	0 23449	0 81	0 46	0 24	0 258	0 4
<b>13</b>	0 197	1 23449	1 81	1 246	1 4	0 374	0 36
<b>14</b>	200	0 46535	0 513	0 477	0 47	0 489	0 47
<b>15</b>	0 2 3	1 46535	1 513	1 477	1 47	0 605	0 59
<b>16</b>	0 205	0 69621	0 745	0 708	0 70	0 721	0 70
<b>17</b>	8	1 696 1	1 745	1 708	1 70	0 836	0 82
<b>18</b>	0 11	0 92707	0 977	0 939	0 93	0 68	0 05
<b>19</b>	0 14	0 15794	0 209	0 170	0 16	0 184	0 16
<b>20</b>	0 16	1 15794	1 209	1 170	1 16	299	0 28
<b>21</b>	0 219	0 38880	441	0 40	0 39	0 415	0 40
<b>22</b>	0 222	1 38880	1 441	1 402	1 39	0 531	0 51
<b>23</b>	0 2 5	0 61966	0 673	0 633	0 62	0 646	0 63
<b>24</b>	227	1 61966	1 673	1 633	1 62	0 762	0 74
<b>25</b>	0 30	0 85052	905	0 864	85	878	86
<b>26</b>	0 233	0 08139	0 137	0 095	0 08	0 109	0 09
<b>27</b>	0 236	1 08139	1 137	1 095	1 08	0 5	0 20
<b>28</b>	38	0 312 5	0 369	3 6	0 3	0 341	0 32
<b>29</b>	41	1 31 25	1 369	1 326	1 3	457	0 43
<b>30</b>	0 44	0 54311	0 601	0 557	0 55	0 57	0 55
<b>31</b>	0 47	1 54311	1 601	1 557	1 55	0 688	0 67
<b>April 1</b>	0 249	77397	0 833	0 787	0 78	804	0 78
<b>2</b>	0 252	0 483	65	0	0 01	0 35	0 0
<b>3</b>	255	1 0483	1 65	1 20	1 01	0 151	0 13
<b>4</b>	0 58	0 3570	0 297	0 51	0 4	0 67	0 24
<b>5</b>	0 60	1 2357	1 97	1 51	1 4	38	0 36
<b>6</b>	63	0 46656	0 529	0 48	0 47	0 498	0 47
<b>7</b>	66	1 46656	1 5 9	1 48	1 47	0 614	0 59
<b>8</b>	268	0 6974	0 761	0 713	70	0 7 9	0 71
<b>9</b>	27	1 69742	1 761	1 713	1 70	0 845	0 82
<b>10</b>	274	9 828	0 994	0 944	0 93	0 77	0 05
<b>11</b>	0 77	0 15915	0 2 6	175	0 16	0 192	0 17
<b>12</b>	0 79	1 15915	1 2 6	1 175	1 16	0 308	0 28
<b>13</b>	0 82	0 39 1	0 458	0 407	0 39	0 424	0 40
<b>14</b>	0 285	1 39001	1 458	1 407	1 39	0 540	0 51
<b>15</b>	0 288	0 6 087	690	0 638	0 62	0 655	0 63
<b>16</b>	0 290	1 62087	1 690	1 638	1 62	0 771	0 74

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8
Day	Mean Long.	A	B	C	D	E	F—I
	°	d	d	d	d	d	d
<b>April</b> 17	173°32219	1°23609	1°236	0°769	0°848	0°851	107°00
18	16°81118	2°23609	2°236	1°769	0°079	0°082	108°00
19	220°30018	3°23609	0°886	0°999	1°079	1°082	109°00
20	63°78917	0°71063	1°886	0°228	0°310	0°312	110°00
21	267°27816	1°71063	0°535	1°228	1°310	1°312	111°00
22	110°76715	2°71063	1°535	0°458	0°541	0°543	112°00
23	314°25615	0°18517	0°185	1°458	1°541	1°543	113°00
24	157°74514	1°18517	1°185	0°687	0°771	0°774	114°00
25	1°23413	2°18517	2°185	1°687	0°002	0°005	115°00
26	204°72312	3°18517	0°835	0°917	1°002	1°005	116°00
27	48°21211	0°65970	1°835	0°146	0°233	0°236	117°00
28	251°70111	1°65970	0°485	1°146	1°233	1°236	118°00
29	95°19010	2°65970	1°485	0°376	0°464	0°467	119°00
30	298°67909	0°13424	0°134	1°376	1°464	1°467	120°00
<b>May</b> 1	142°16808	1°13424	1°134	0°605	0°695	0°698	121°00
2	345°65708	2°13424	2°134	1°605	1°695	1°698	122°00
3	189°14607	3°13424	0°784	0°835	0°925	0°928	123°00
4	32°63506	0°60878	1°784	0°064	0°156	0°159	124°00
5	236°12405	1°60878	0°434	1°064	1°156	1°159	125°00
6	79°61305	2°60878	1°434	0°294	0°387	0°390	126°00
7	283°10204	0°08331	0°083	1°294	1°387	1°390	127°00
8	126°59103	1°08331	1°083	0°523	0°618	0°621	128°00
9	330°08002	2°08331	2°083	1°523	1°618	1°621	129°00
10	173°56902	3°08331	0°733	0°753	0°849	0°852	130°00
11	17°05801	0°55785	1°733	1°753	0°079	0°083	131°00
12	220°54700	1°55785	0°383	0°982	1°079	1°083	132°00
13	64°03599	2°55785	1°383	0°212	0°310	0°313	133°00
14	267°52499	0°03238	0°032	1°212	1°310	1°313	134°00
15	111°01398	1°03238	1°032	0°441	0°541	0°544	135°00
16	314°50297	2°03238	2°032	1°441	1°541	1°544	136°00
17	157°99196	3°03238	0°682	0°671	0°772	0°775	137°00
18	1°48096	0°50692	1°682	1°671	0°003	0°006	138°00
19	204°96995	1°50692	0°332	0°900	1°003	1°006	139°00
20	48°45894	2°50692	1°332	0°130	0°233	0°237	140°00
21	251°94793	3°50692	2°332	1°130	1°233	1°237	141°00
22	95°43693	0°98146	0°981	0°359	0°464	0°468	142°00
23	298°92592	1°98146	1°981	1°359	1°464	1°468	143°00
24	142°41491	2°98146	0°631	0°589	0°695	0°699	144°00
25	345°90390	0°45599	1°631	1°589	1°695	1°699	145°00
26	189°39290	1°45599	0°281	0°818	0°926	0°929	146°00
27	32°88189	2°45599	1°281	0°048	0°157	0°160	147°00
28	236°37088	3°45599	2°281	1°048	1°157	1°160	148°00
29	79°85987	0°93053	0°931	0°277	0°387	0°391	149°00
30	283°34887	1°93053	1°931	1°277	1°387	1°391	150°00
31	126°83786	2°93053	0°580	0°506	0°618	0°622	151°00
<b>June</b> 1	330°32685	0°40507	1°580	1°506	1°618	1°622	152°00
2	173°81584	1°40507	0°230	0°736	0°849	0°853	153°00
3	17°30483	2°40507	1°230	1°736	0°080	0°084	154°00
4	220°79383	3°40507	2°230	0°965	1°080	1°084	155°00
5	64°28282	0°87960	0°880	0°195	0°311	0°314	156°00
6	267°77181	1°87960	1°880	1°195	1°311	1°314	157°00
7	111°26080	2°87960	0°529	0°424	0°541	0°545	158°00

In Leap Year diminish the date in Columns 1, 9, by 1 day after Feb. 28.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

9					3	4	5	6
Day		J	K	L	M	N, O	P	Q
<b>April</b>			1				d	d
17		0 93	0 85173	0 9 2	0 869	0 86	0 02	0 86
18		0 96	0 08 59	0 154	0 1	0 09	0 118	0 9
19		99	1 08 59	1 154	1 1	1 9	34	0 1
20		0 3 1	3 1346	0 386	0 331	0 3	35	0 32
21		3 4	1 31346	1 386	1 331	1 3	0 465	44
22		307	0 5443	618	0 56	55	0 581	55
23		310	1 5443	1 618	1 562	1 55	0 697	0 67
24		0 31	0 77518	0 850	0 793	0 78	0 81	78
25		0 315	0 0604	0 08	0 5	0 1	0 044	0
26		0 318	1 00604	1 8	1 5	1 01	0 160	0 13
27		3 1	3 691	314	0 256	0 24	0 75	0 25
28		0 3 3	1 3691	1 314	1 56	1 4	0 391	36
29		326	0 46777	0 546	0 487	0 47	0 507	0 48
30		3 9	1 46777	1 546	1 487	1 47	0 6 3	0 59
<b>May</b>	1	0 33	0 69863	0 778	0 718	0 70	0 738	0 71
2		334	1 69863	0 010	1 718	1 70	854	0 82
3		0 337	9 949	1 010	0 949	0 93	0 085	0 05
4		0 34	0 16035	24	0 18	0 16	0 201	0 17
5		0 342	1 16035	1 4	1 18	1 16	0 317	29
6		0 345	391 2	0 474	0 411	0 40	0 433	0 40
7		0 348	1 39122	1 474	1 411	1 40	0 548	0 5
8		0 351	0 62 08	706	643	0 63	0 664	0 63
9		0 353	1 6 8	1 706	1 643	1 63	0 780	0 75
10		356	85 94	0 938	874	0 86	0 11	0 86
11		0 359	0 08380	17	1 5	0 09	127	0 09
12		0 36	1 08380	1 170	1 105	1 09	0 43	0 1
13		0 364	0 31466	0 40	336	0 3	0 358	0 33
14		367	1 31466	1 40	1 336	1 32	0 474	0 44
15		37	0 54553	0 634	567	55	0 590	0 56
16		373	1 54553	1 634	1 567	1 55	706	0 67
17		0 375	0 77639	0 866	0 798	78	0 8 1	0 79
18		378	0 725	0 98	0 029	0 1	0 53	0 02
19		381	1 007 5	1 098	1 0 9	1 01	0 168	0 13
20		384	0 3811	33	0 61	0 4	0 284	0 25
21		386	1 3811	1 33	1 61	1 24	0 400	0 36
22		389	0 46898	0 56	49	0 47	516	0 48
23		39	1 46898	1 562	1 492	1 47	631	0 60
24		0 395	0 69984	0 794	0 7 3	7	0 747	71
25		397	1 69984	6	1 723	1 70	863	0 83
26		0 40	0 93070	1 6	0 954	94	0 94	0 6
27		403	0 16156	0 58	185	0 17	0 10	0 17
28		0 4 5	1 16156	1 58	1 185	1 17	0 3 6	0 29
29		0 408	0 39242	0 490	0 416	40	0 441	0 40
30		0 411	1 39 4	1 490	1 416	1 40	0 557	0 52
31		414	0 6 3 9	0 7 2	0 647	0 63	673	0 64
<b>June</b>	1	0 416	1 6 3 9	1 7	1 647	1 63	0 789	0 75
2		0 419	0 85415	0 954	0 879	86	0 0 0	0 87
3		0 4 2	0 08501	0 186	0 110	0 9	0 136	0 10
4		4 5	1 8501	1 186	1 110	1 09	0 51	0 1
5		0 427	3 1587	0 418	0 341	0 32	0 367	0 33
6		430	1 31587	1 418	1 341	1 32	0 483	0 44
7		0 433	0 54674	650	0 57	55	0 599	0 56

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8
Day	Mean Long.	A	B	C	D	E	F—I
<b>June</b>	<sup>0</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
8	314°74980	0°35414	1°529	1°424	1°541	1°545	159°00
9	158°23879	1°35414	0°179	0°654	0°772	0°776	160°00
10	1°72778	2°35414	1°179	1°654	0°003	0°007	161°00
11	205°21677	3°35414	2°179	0°883	1°003	1°007	162°00
12	48°70577	0°82868	0°829	0°113	0°234	0°238	163°00
13	252°19476	1°82868	1°829	1°113	1°234	1°238	164°00
14	95°68375	2°82868	0°478	0°342	0°465	0°469	165°00
15	299°17274	0°30321	1°478	1°342	1°465	1°469	166°00
16	142°66174	1°30321	0°128	0°572	0°695	0°700	167°00
17	346°15073	2°30321	1°128	1°572	1°695	1°700	168°00
18	189°63972	3°30321	2°128	0°801	0°926	0°930	169°00
19	33°12871	0°77775	0°778	0°031	0°157	0°161	170°00
20	236°61771	1°77775	1°778	1°031	1°157	1°161	171°00
21	80°10670	2°77775	0°427	0°260	0°388	0°392	172°00
22	283°59569	0°25229	1°427	1°260	1°388	1°392	173°00
23	127°08468	1°25229	0°077	0°490	0°619	0°623	174°00
24	330°57368	2°25229	1°077	1°490	1°619	1°623	175°00
25	174°06267	3°25229	2°077	0°719	0°849	0°854	176°00
26	17°55166	0°72682	0°727	1°719	0°080	0°085	177°00
27	221°04065	1°72682	1°727	0°949	1°080	1°085	178°00
28	64°52965	2°72682	0°377	0°178	0°311	0°315	179°00
29	268°01864	0°20136	1°377	1°178	1°311	1°315	180°00
30	111°50763	1°20136	0°026	0°408	0°542	0°546	181°00
<b>July</b>							
1	314°99662	2°20136	1°026	1°408	1°542	1°546	182°00
2	158°48562	3°20136	2°026	0°637	0°773	0°777	183°00
3	1°97461	0°67589	0°676	1°637	0°003	0°008	184°00
4	205°46360	1°67589	1°676	0°867	1°003	1°008	185°00
5	48°95259	2°67589	0°326	0°096	0°234	0°239	186°00
6	252°44159	0°15043	1°326	1°096	1°234	1°239	187°00
7	95°93058	1°15043	2°326	0°326	0°465	0°470	188°00
8	299°41957	2°15043	0°975	1°326	1°465	1°470	189°00
9	142°90856	3°15043	1°975	0°555	0°696	0°701	190°00
10	346°39756	0°62497	0°625	1°555	1°696	1°701	191°00
11	189°88655	1°62497	1°625	0°785	0°927	0°931	192°00
12	33°37554	2°62497	0°275	0°014	0°157	0°162	193°00
13	236°86453	0°09950	1°275	1°014	1°157	1°162	194°00
14	80°35352	1°09950	2°275	0°244	0°388	0°393	195°00
15	283°84252	2°09950	0°924	1°244	1°388	1°393	196°00
16	127°33151	3°09950	1°924	0°473	0°619	0°624	197°00
17	330°82050	0°57404	0°574	1°473	1°619	1°624	198°00
18	174°30949	1°57404	1°574	0°703	0°850	0°855	199°00
19	17°79849	2°57404	0°224	1°703	0°081	0°086	200°00
20	221°28748	0°04858	1°224	0°932	1°081	1°086	201°00
21	64°77647	1°04858	2°224	0°162	0°311	0°316	202°00
22	268°26546	2°04858	0°873	1°162	1°311	1°316	203°00
23	111°75446	3°04858	1°873	0°391	0°542	0°547	204°00
24	315°24345	0°52311	0°523	1°391	1°542	1°547	205°00
25	158°73244	1°52311	1°523	0°621	0°773	0°778	206°00
26	2°22143	2°52311	0°173	1°621	0°004	0°009	207°00
27	205°71043	3°52311	1°173	0°851	1°004	1°009	208°00
28	49°19942	0°99765	2°173	0°080	0°235	0°240	209°00
29	252°68841	1°99765	0°822	1°080	1°235	1°240	210°00

In Leap Year diminish the date in Columns 2, 9, by 1 day after Feb. 28.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

9				3	4	5	6		
D y		J	K	L	M	N O	P	Q	
June	8	y 0 436	d I 54674	l I 65			d 0 714	d 0 67	
	9	0 438	0 77760	0 882	I 57	I 55	0 830	0 9	
	10	0 441	0 00846	0 114	0 803	0 78	0 061	0 02	
	11	0 444	I 0 846	I 114	34	0 01	0 177	0 14	
	12	0 447	393	346	I 034	I 01	93	0 5	
					0 66	0 4			
	13	0 449	I 2393	I 346	I 66	I 4	0 409	0 37	
	14	0 45	0 47 18	0 579	497	0 48	0 5 4	0 48	
	15	0 455	I 47018	I 579	I 497	I 48	0 640	0 60	
	16	0 458	0 7 105	0 811	0 7 8	0 71	0 756	0 71	
	17	460	I 701 5	0 43	I 7 8	I 71	0 87	83	
	18	463	0 93191	I 043	0 959	0 94	0 103	0 06	
	19	0 466	0 16 77	0 275	0 190	17	0 19	0 18	
	20	0 468	I 16 77	I 75	I 190	I 17	0 334	0 29	
	21	0 471	0 39363	0 507	0 4 1	0 40	450	0 41	
	22	0 474	I 39363	I 507	I 4 1	I 40	0 566	0 52	
	23	0 477	0 6 450	0 739	0 65	0 63	0 68	0 64	
	24	0 479	I 6 450	I 739	I 65	I 63	0 797	0 75	
	25	48	0 85536	0 971	0 884	0 86	0 29	0 87	
	26	0 485	0 086 2	0 2 3	0 115	0 09	0 144	0 10	
	27	0 488	I 086	I 03	I 115	I 09	0 260	0 22	
	28	0 490	317 8	0 435	0 346	0 3	0 376	0 33	
	29	0 493	I 31708	I 435	I 346	I 3	0 492	0 45	
	30	496	0 54794	0 667	0 577	55	0 607	0 56	
	July	1	499	I 54794	I 667	I 577	I 55	0 7 3	0 68
		2	0 5 1	0 77881	0 899	0 808	0 79	0 839	0 79
	3	5 4	0 00967	0 131	0 039	0	7	0 0	
	4	507	I 0 967	I 131	I 039	I 0	186	0 14	
	5	0 510	4053	363	0 27	0 5	0 3	0 26	
	6	0 512	I 4053	I 363	I 270	I 5	0 417	0 37	
	7	0 515	0 47139	595	0 50	0 48	0 533	0 49	
8	0 518	I 47139	I 595	I 50	I 48	0 649	0 6		
9	0 5	70 6	8 7	0 733	0 71	0 765	0 72		
10	0 5 3	I 70 6	0 59	I 733	I 71	0 880	0 83		
11	0 526	0 9331	I 59	0 964	0 94	0 11	0 06		
12	0 5 9	16398	0 91	0 195	17	0 2 7	18		
13	0 532	I 16398	I 291	I 195	I 17	0 343	0 29		
14	0 534	0 39484	0 5 3	4 6	0 40	0 459	41		
15	537	I 39484	I 5 3	I 4 6	I 40	0 575	0 53		
16	0 540	6 570	755	657	63	0 690	64		
17	0 54	I 6 57	I 755	I 657	I 63	806	0 76		
18	0 545	0 85657	0 987	0 888	0 86	0 038	0 87		
19	0 548	0 8743	0 219	I 0	0 09	0 153	0 10		
20	0 551	I 08743	I 19	I 1 0	I 09	69	22		
21	553	318 9	0 451	0 351	0 33	0 385	0 33		
22	556	I 318 9	I 451	I 351	I 33	0 5 0	0 45		
23	0 559	0 549 5	683	0 58	0 56	0 616	0 57		
24	0 56	I 54915	I 683	I 58	I 56	0 732	0 68		
25	0 564	0 780	0 915	0 813	0 79	0 848	80		
26	567	0 01088	147	0 044	0 0	79	0 03		
27	0 57	I 01 88	I 147	I 44	I 02	0 195	0 14		
28	0 573	0 24174	0 379	0 275	0 25	0 310	0 26		
29	0 575	I 24174	I 379	I 75	I 5	0 426	0 37		

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

1		2	3	4	5	6	7	8
Day		Mean Long.	A	B	C	D	E	F—I
		°	d	d	d	d	d	d
<b>July</b>	<b>30</b>	96°17740	2°99765	1°822	0°309	0°465	0°471	211°00
	<b>31</b>	299°66640	0°47219	0°472	1°309	1°465	1°471	212°00
<b>August</b>	<b>1</b>	143°15539	1°47219	1°472	0°539	0°696	0°702	213°00
	<b>2</b>	346°64438	2°47219	0°122	1°539	1°696	1°702	214°00
	<b>3</b>	190°13337	3°47219	1°122	0°768	0°927	0°932	215°00
	<b>4</b>	33°62237	0°94672	2°122	1°768	0°158	0°163	216°00
	<b>5</b>	237°11136	1°94672	0°772	0°998	1°158	1°163	217°00
	<b>6</b>	80°60035	2°94672	1°772	0°227	0°389	0°394	218°00
	<b>7</b>	284°08934	0°42126	0°421	1°227	1°389	1°394	219°00
	<b>8</b>	127°57834	1°42126	1°421	0°457	0°619	0°625	220°00
	<b>9</b>	331°06733	2°42126	0°071	1°457	1°619	1°625	221°00
	<b>10</b>	174°55632	3°42126	1°071	0°686	0°850	0°856	222°00
	<b>11</b>	18°04531	0°89580	2°071	1°686	0°081	0°087	223°00
	<b>12</b>	221°53431	1°89580	0°721	0°915	1°081	1°087	224°00
	<b>13</b>	65°02330	2°89580	1°721	0°145	0°312	0°317	225°00
	<b>14</b>	268°51229	0°37033	0°370	1°145	1°312	1°317	226°00
	<b>15</b>	112°00128	1°37033	1°370	0°374	0°543	0°548	227°00
	<b>16</b>	315°49028	2°37033	0°020	1°374	1°543	1°548	228°00
	<b>17</b>	158°97927	3°37033	1°020	0°604	0°773	0°779	229°00
	<b>18</b>	2°46826	0°84487	2°020	1°604	0°004	0°010	230°00
	<b>19</b>	205°95725	1°84487	0°670	0°833	1°004	1°010	231°00
	<b>20</b>	49°44624	2°84487	1°670	0°063	0°235	0°241	232°00
	<b>21</b>	252°93524	0°31941	0°319	1°063	1°235	1°241	233°00
	<b>22</b>	96°42423	1°31941	1°319	0°292	0°466	0°472	234°00
	<b>23</b>	299°91322	2°31941	2°319	1°292	1°466	1°472	235°00
	<b>24</b>	143°40221	3°31941	0°969	0°522	0°697	0°703	236°00
	<b>25</b>	346°89121	0°79394	1°969	1°522	1°697	1°703	237°00
	<b>26</b>	190°38020	1°79394	0°619	0°751	0°927	0°933	238°00
	<b>27</b>	33°86919	2°79394	1°619	1°751	0°158	0°164	239°00
	<b>28</b>	237°35818	0°26848	0°268	0°981	1°158	1°164	240°00
	<b>29</b>	80°84718	1°26848	1°268	0°210	0°389	0°395	241°00
	<b>30</b>	284°33617	2°26848	2°268	1°210	1°389	1°395	242°00
	<b>31</b>	127°82516	3°26848	0°918	0°440	0°620	0°626	243°00
<b>September</b>	<b>1</b>	331°31415	0°74301	1°918	1°440	1°620	1°626	244°00
	<b>2</b>	174°80315	1°74301	0°568	0°669	0°851	0°857	245°00
	<b>3</b>	18°29214	2°74301	1°568	1°669	0°081	0°088	246°00
	<b>4</b>	221°78113	0°21755	0°218	0°899	1°081	1°088	247°00
	<b>5</b>	65°27012	1°21755	1°218	0°128	0°312	0°318	248°00
	<b>6</b>	268°75912	2°21755	2°218	1°128	1°312	1°318	249°00
	<b>7</b>	112°24811	3°21755	0°867	0°358	0°543	0°549	250°00
	<b>8</b>	315°73710	0°69209	1°867	1°358	1°543	1°549	251°00
	<b>9</b>	159°22609	1°69209	0°517	0°587	0°774	0°780	252°00
	<b>10</b>	2°71509	2°69209	1°517	1°587	0°005	0°011	253°00
	<b>11</b>	206°20408	0°16662	0°167	0°817	1°005	1°011	254°00
	<b>12</b>	49°69307	1°16662	1°167	0°046	0°236	0°242	255°00
	<b>13</b>	253°18206	2°16662	2°167	1°046	1°236	1°242	256°00
	<b>14</b>	96°67106	3°16662	0°816	0°276	0°466	0°473	257°00
	<b>15</b>	300°16005	0°64116	1°816	1°276	1°466	1°473	258°00
	<b>16</b>	143°64904	1°64116	0°466	0°505	0°697	0°704	259°00
	<b>17</b>	347°13803	2°64116	1°466	1°505	1°697	1°704	260°00
	<b>18</b>	190°62703	0°11570	0°116	0°735	0°928	0°934	261°00
	<b>19</b>	34°11602	1°11570	1°116	1°735	0°159	0°165	262°00

In Leap Year diminish the date in Columns 1, 9, by 1 day after Feb. 28.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

9					3	4	5	6
Day		J	K	L	M	N, O	P	Q
July	30	0 578	d 0 47 60	0 611	d 0 506	0 48	0 54	49
	31	0 581	1 4726	1 611	1 506	1 48	0 658	60
August	1	584	0 70346	0 843	738	0 71	0 773	0 72
	2	586	1 7 346	0 75	1 738	1 71	0 0 5	0 84
	3	0 589	0 93433	1 075	0 969	0 94	1 1	0 07
	4	59	0 16519	0 307		0 17	36	0 18
	5	595	1 16519	1 3 7	1 0	1 17	0 35	3
	6	0 597	39605	0 539	0 431	0 4	0 468	41
	7	0 600	1 396 5	1 539	1 431	1 40	0 583	53
	8	0 603	62691	0 771	0 662	0 63	0 699	0 64
	9	0 605	1 6 691	0 003	1 662	1 63	0 815	0 76
	10	608	0 85777	1 003	0 893	0 87	0 046	0 00
	11	0 611	8864	0 35	0 1 4	0 10	0 162	0 11
	12	0 614	1 8864	1 35	1 1 4	1 10	0 78	0
	13	0 616	0 3195	0 467	0 356	0 33	0 393	0 34
	14	0 619	1 31950	1 467	1 356	1 33	0 509	0 45
	15	0 6	0 55036	0 699	0 587	0 56	0 625	0 57
	16	625	1 55 36	1 699	1 587	1 56	0 741	68
	17	0 627	781	0 931	0 818	0 79	0 856	0 80
	18	0 630	0 01 09	0 164	0 49	0 02	0 088	0 03
	19	0 633	1 01 9	1 164	1 049	1 02	0 204	0 15
	20	0 636	0 4 95	0 396	0 280	0 25	0 319	0 26
	21	0 638	1 24 95	1 396	1 8	1 5	435	0 38
	22	641	0 47381	6 8	0 511	0 48	551	0 49
	23	0 644	1 47381	1 6 8	1 511	1 48	666	61
	24	647	0 70467	0 860	743	71	0 78	0 72
	25	0 649	1 70467	0 92	1 743	1 71	0 014	84
	26	65	0 93553	1 9	0 974	0 94	0 129	0 07
	27	655	0 16640	0 3 4	0 05	0 17	0 45	0 19
	28	0 658	1 1664	1 3 4	1 05	1 17	0 361	0 30
	29	0 660	0 39726	0 556	0 436	0 41	0 476	0 42
	30	663	1 39726	1 556	1 436	1 41	0 592	0 53
	31	0 666	0 6 812	0 788	0 667	0 64	0 708	0 65
September	1	0 668	1 6 812	0 02	1 667	1 64	824	0 76
	2	0 671	0 85898	1 02	0 898	0 87	0 055	0 00
	3	0 674	0 08985	0 5	0 1 9	0 1	0 171	0 11
	4	677	1 8985	1 5	1 129	1 10	0 87	3
	5	679	3 071	0 484	0 361	0 33	0 40	0 34
	6	0 68	1 3 071	1 484	1 361	1 33	0 518	0 46
	7	0 685	55157	716	0 59	0 56	0 634	0 57
	8	688	1 55157	1 716	1 59	1 56	0 749	0 69
	9	69	0 78 43	0 948	0 8 3	0 79	0 865	0 80
	10	0 693	0 1329	0 180	0 54	0 0	0 097	0 3
	11	0 696	1 013 9	1 180	1 054	1 0	0 21	0 15
	12	0 699	24416	0 41	0 85	0 5	0 328	0 26
	13	7 1	1 4416	1 41	1 285	1 25	0 444	0 38
	14	0 704	0 4750	644	0 516	0 48	0 559	0 50
	15	0 707	1 475	1 644	1 516	1 48	0 675	0 61
	16	0 710	0 70588	0 876	0 747	0 71	0 791	73
	17	712	1 70588	0 1 8	1 747	1 71	0 0	0 84
	18	0 715	0 93674	1 108	0 979	0 95	0 138	0 07
	19	0 718	0 16761	340	0 210	0 18	0 54	0 19

I L p Y dimi h th d t C lum g by d y ft F b s



# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

*X continued* Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8
Day	Mean Long.	A	B	C	D	E	F—I
	°	d	d	d	d	d	d
<b>September</b> 20	237°60501	2°11570	2°116	0°964	1°159	1°165	263°00
21	81°09400	3°11570	0°765	0°194	0°390	0°396	264°00
22	284°58300	0°59023	1°765	1°194	1°390	1°396	265°00
23	128°07199	1°59023	0°415	0°423	0°620	0°627	266°00
24	331°56098	2°59023	1°415	1°423	1°620	1°627	267°00
25	175°04997	0°06477	0°065	0°653	0°851	0°858	268°00
26	18°53897	1°06477	1°065	1°653	0°082	0°089	269°00
27	222°02796	2°06477	2°065	0°882	1°082	1°089	270°00
28	65°51695	3°06477	0°714	0°112	0°313	0°319	271°00
29	269°00594	0°53931	1°714	1°112	1°313	1°319	272°00
<b>October</b> 30	112°49493	1°53931	0°364	0°341	0°544	0°550	273°00
1	315°98393	2°53931	1°364	1°341	1°544	1°550	274°00
2	159°47292	0°01384	0°014	0°571	0°774	0°781	275°00
3	2°96191	1°01384	1°014	1°571	0°005	0°012	276°00
4	206°45090	2°01384	2°014	0°800	1°005	1°012	277°00
5	49°93990	3°01384	0°664	0°030	0°236	0°243	278°00
6	253°42889	0°48838	1°664	1°030	1°236	1°243	279°00
7	96°91788	1°48838	0°313	0°259	0°467	0°474	280°00
8	300°40687	2°48838	1°313	1°259	1°467	1°474	281°00
9	143°89587	3°48838	2°313	0°489	0°698	0°705	282°00
10	347°38486	0°96291	0°963	1°489	1°698	1°705	283°00
11	190°87385	1°96291	1°963	0°718	0°928	0°935	284°00
12	34°36284	2°96291	0°613	1°718	0°159	0°166	285°00
13	237°85184	0°43745	1°613	0°948	1°159	1°166	286°00
14	81°34083	1°43745	0°262	0°177	0°390	0°397	287°00
15	284°82982	2°43745	1°262	1°177	1°390	1°397	288°00
16	128°31881	3°43745	2°262	0°407	0°621	0°628	289°00
17	331°80781	0°91199	0°912	1°407	1°621	1°628	290°00
18	175°29680	1°91199	1°912	0°636	0°852	0°859	291°00
19	18°78579	2°91199	0°562	1°636	0°082	0°090	292°00
20	222°27478	0°38652	1°562	0°866	1°082	1°090	293°00
21	65°76378	1°38652	0°211	0°095	0°313	0°320	294°00
22	269°25277	2°38652	1°211	1°095	1°313	1°320	295°00
23	112°74176	3°38652	2°211	0°324	0°544	0°551	296°00
24	316°23075	0°86106	0°861	1°324	1°544	1°551	297°00
25	159°71975	1°86106	1°861	0°554	0°775	0°782	298°00
26	3°20874	2°86106	0°511	1°554	0°006	0°013	299°00
27	206°69773	0°33560	1°511	0°783	1°006	1°013	300°00
28	50°18672	1°33560	0°160	0°013	0°236	0°244	301°00
29	253°67572	2°33560	1°160	1°013	1°236	1°244	302°00
30	97°16471	3°33560	2°160	0°242	0°467	0°475	303°00
<b>November</b> 31	300°65370	0°81013	0°810	1°242	1°467	1°475	304°00
1	144°14269	1°81013	1°810	0°472	0°698	0°706	305°00
2	347°63169	2°81013	0°460	1°472	1°698	1°706	306°00
3	191°12068	0°28467	1°460	0°701	0°929	0°936	307°00
4	34°60967	1°28467	0°110	1°701	0°160	0°167	308°00
5	238°09866	2°28467	1°110	0°931	1°160	1°167	309°00
6	81°58765	3°28467	2°110	0°160	0°390	0°398	310°00
7	285°07665	0°75921	0°759	1°160	1°390	1°398	311°00
8	128°56564	1°75921	1°759	0°390	0°621	0°629	312°00
9	332°05463	2°75921	0°409	1°390	1°621	1°629	313°00
10	175°54362	0°23374	1°409	0°619	0°852	0°860	314°00

In Leap Year diminish the date in Columns 1, 9, by 1 day after Feb. 28.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

9				3	4	5	6
Day	J	K	L	M	N, O	P	Q
			d		d	d	l
<b>September</b>							
<b>20</b>	0 721	1 16761	1 340	1 1	1 18	0 370	0 30
<b>21</b>	0 723	0 39847	0 57	0 441	41	0 485	0 42
<b>22</b>	0 7 6	1 39847	1 572	1 441	1 41	0 601	0 54
<b>23</b>	0 729	0 6 933	0 804	0 672	0 64	0 717	0 65
<b>24</b>	0 73	1 6 933	0 36	1 672	1 64	0 83	0 77
<b>25</b>	0 734	0 86019	1 036	903	0 87	0 064	0
<b>26</b>	0 737	0 09105	0 268	134	0 10	0 180	11
<b>27</b>	0 740	1 09105	1 68	1 134	1 10	0 95	0 23
<b>28</b>	0 742	3219	0 500	0 365	0 33	411	0 34
<b>29</b>	0 745	1 3219	1 500	1 365	1 33	0 527	0 46
<b>October</b>							
<b>30</b>	0 748	0 55278	0 73	0 597	0 56	0 64	0 57
<b>1</b>	0 751	1 55278	1 732	1 597	1 56	0 758	0 69
<b>2</b>	0 753	0 78364	0 964	828	0 79	0 874	0 81
<b>3</b>	0 756	0 1450	0 196	0 59	0	0 105	0 04
<b>4</b>	0 759	1 1450	1 196	1 059	1 02	0 21	0 15
<b>5</b>	0 762	0 24537	0 428	0 90	0 25	0 337	0 27
<b>6</b>	0 764	1 4537	1 4 8	1 290	1 5	0 453	0 38
<b>7</b>	0 767	0 476 3	0 660	0 521	0 49	0 568	0 50
<b>8</b>	0 770	1 47623	1 660	1 5 1	1 49	0 684	0 61
<b>9</b>	0 773	0 70709	0 892	0 752	0 72	0 80	0 73
<b>10</b>	0 775	1 70709	0 124	1 75	1 72	0 031	0 85
<b>11</b>	0 778	0 93795	1 124	0 983	0 95	0 147	0 08
<b>12</b>	0 781	0 16881	356	0 215	0 18	0 263	0 19
<b>13</b>	0 784	1 16881	1 356	1 15	1 18	0 378	0 31
<b>14</b>	0 786	0 39968	0 588	0 446	0 41	0 494	0 42
<b>15</b>	0 789	1 39968	1 588	1 446	1 41	0 610	0 54
<b>16</b>	0 792	0 63054	0 8 0	0 677	0 64	0 726	0 65
<b>17</b>	0 795	1 63054	0 052	1 677	1 64	0 841	0 77
<b>18</b>	0 797	0 86140	1 052	0 9 8	0 87	0 73	0 00
<b>19</b>	80	0 09 26	0 284	0 139	0 10	0 188	0 12
<b>20</b>	0 803	1 09226	1 284	1 139	1 10	0 304	0 23
<b>21</b>	0 805	0 3 313	0 516	0 370	0 33	0 420	0 35
<b>22</b>	0 808	1 3 313	1 516	1 370	1 33	0 536	0 46
<b>23</b>	811	0 55399	0 749	0 6 2	0 56	651	0 58
<b>24</b>	814	1 55399	1 749	1 60	1 56	0 767	0 69
<b>25</b>	0 816	78485	0 981	0 833	0 80	0 883	0 81
<b>26</b>	0 819	0 1571	0 213	0 064	0 03	0 114	0 4
<b>27</b>	0 8	1 1571	1 13	1 064	1 03	0 230	0 16
<b>28</b>	8 5	0 24657	0 445	0 95	0 26	0 346	0 27
<b>29</b>	8 7	1 24657	1 445	1 95	1 6	0 461	0 39
<b>30</b>	0 830	0 47744	677	0 526	0 49	0 577	0 50
<b>31</b>	0 833	1 47744	1 677	1 526	1 49	0 693	0 62
<b>November</b>							
<b>1</b>	0 836	70830	0 909	0 757	0 7	809	73
<b>2</b>	0 838	1 7 830	0 141	1 757	1 7	0 040	0 85
<b>3</b>	0 841	0 93916	1 141	0 988	0 95	0 156	0 08
<b>4</b>	0 844	0 17002	0 373	2 0	0 18	0 271	0 19
<b>5</b>	0 847	1 17002	1 373	1 20	1 18	0 387	0 31
<b>6</b>	0 849	0 40 88	0 605	0 451	0 41	0 503	43
<b>7</b>	852	1 4 088	1 605	1 451	1 41	0 619	0 54
<b>8</b>	855	0 63175	0 837	0 68	0 64	0 734	0 66
<b>9</b>	0 858	1 63175	0 069	1 68	1 64	0 850	0 77
<b>10</b>	0 860	0 86261	1 069	0 913	0 87	0 081	0 00

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

**X continued**      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8
Day	Mean Long.	A	B	C	D	E	F—I
	°	d	d	d	d	d	d
<b>November 11</b>	19°03262	1'23374	0'059	1'619	0'083	0'091	315'00
<b>12</b>	222°52161	2'23374	1'059	0'849	1'083	1'091	316'00
<b>13</b>	66°01060	3'23374	2'059	0'078	0'314	0'321	317'00
<b>14</b>	269°49959	0'70828	0'708	1'078	1'314	1'321	318'00
<b>15</b>	112°98859	1'70828	1'708	0'308	0'544	0'552	319'00
<b>16</b>	316°47758	2'70828	0'358	1'308	1'544	1'552	320'00
<b>17</b>	159°96657	0'18282	1'358	0'537	0'775	0'782	321'00
<b>18</b>	3°45556	1'18282	0'008	1'537	0'006	0'014	322'00
<b>19</b>	206°94456	2'18282	1'008	0'767	1'006	1'014	323'00
<b>20</b>	50°43355	3'18282	2'008	1'767	0'237	0'245	324'00
<b>21</b>	253°92254	0'65735	0'657	0'996	1'237	1'245	325'00
<b>22</b>	97°41153	1'65735	1'657	0'226	0'468	0'476	326'00
<b>23</b>	300°90053	2'65735	0'307	1'226	1'468	1'476	327'00
<b>24</b>	144°38952	0'13189	1'307	0'455	0'698	0'707	328'00
<b>25</b>	347°87851	1'13189	2'307	1'455	1'698	1'707	329'00
<b>26</b>	191°36750	2'13189	0'957	0'685	0'929	0'937	330'00
<b>27</b>	34°85050	3'13189	1'957	1'685	0'160	0'168	331'00
<b>28</b>	238°34549	0'60642	0'606	0'914	1'160	1'168	332'00
<b>29</b>	81°83448	1'60642	1'606	0'144	0'391	0'398	333'00
<b>30</b>	285°32347	2'60642	0'256	1'144	1'391	1'398	334'00
<b>December 1</b>	128°81247	0'08096	1'256	0'373	0'622	0'630	335'00
<b>2</b>	332°30146	1'08096	2'256	1'373	1'622	1'630	336'00
<b>3</b>	175°79045	2'08096	0'906	0'603	0'852	0'861	337'00
<b>4</b>	19°27944	3'08096	1'906	1'603	0'083	0'092	338'00
<b>5</b>	222°76844	0'55550	0'556	0'832	1'083	1'092	339'00
<b>6</b>	66°25743	1'55550	1'556	0'062	0'314	0'322	340'00
<b>7</b>	269°74642	2'55550	0'205	1'062	1'314	1'322	341'00
<b>8</b>	113°23541	0'03003	1'205	0'291	0'545	0'553	342'00
<b>9</b>	316°72441	1'03003	2'205	1'291	1'545	1'553	343'00
<b>10</b>	160°21340	2'03003	0'855	0'521	0'776	0'784	344'00
<b>11</b>	3°70239	3'03003	1'855	1'521	0'006	0'015	345'00
<b>12</b>	207°19138	0'50457	0'505	0'750	1'006	1'015	346'00
<b>13</b>	50°68037	1'50457	1'505	1'750	0'237	0'246	347'00
<b>14</b>	254°16937	2'50457	0'154	0'980	1'237	1'246	348'00
<b>15</b>	97°65836	3'50457	1'154	0'209	0'468	0'477	349'00
<b>16</b>	301°14735	0'97911	2'154	1'209	1'468	1'477	350'00
<b>17</b>	144°63634	1'97911	0'804	0'439	0'699	0'708	351'00
<b>18</b>	348°12534	2'97911	1'804	1'439	1'699	1'708	352'00
<b>19</b>	191°61433	0'45364	0'454	0'668	0'930	0'938	353'00
<b>20</b>	35°10332	1'45364	1'454	1'668	0'160	0'169	354'00
<b>21</b>	238°59231	2'45364	0'103	0'898	1'160	1'169	355'00
<b>22</b>	82°08131	3'45364	1'103	0'127	0'391	0'400	356'00
<b>23</b>	285°57030	0'92818	2'103	1'127	1'391	1'400	357'00
<b>24</b>	129°05929	1'92818	0'753	0'357	0'622	0'631	358'00
<b>25</b>	332°54828	2'92818	1'753	1'357	1'622	1'631	359'00
<b>26</b>	176°03728	0'40272	0'403	0'586	0'853	0'862	360'00
<b>27</b>	19°52627	1'40272	1'403	1'586	0'084	0'093	361'00
<b>28</b>	223°01526	2'40272	0'052	0'816	1'084	1'093	362'00
<b>29</b>	66°50425	3'40272	1'052	0'045	0'314	0'323	363'00
<b>30</b>	269°99325	0'87725	2'052	1'045	1'314	1'323	364'00
<b>31</b>	113°48224	1'87725	0'702	0'275	0'545	0'554	365'00
<b>32</b>	316°97123	2'87725	1'702	1'275	1'545	1'554	366'00

In Leap Year diminish the date in Columns 1, 9, by 1 day after Feb. 28.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

9				3	4	5	6
Day	J	K	L	M	N O	P	Q
	y	l				a	
<b>November 11</b>	0 863	09347	0 301	0 144	0 10	0 197	0 1
<b>12</b>	0 866	1 09347	1 301	1 144	1 10	0 313	0 23
<b>13</b>	868	0 3 433	0 533	375	34	0 4 9	0 35
<b>14</b>	0 871	1 3 433	1 533	1 375	1 34	0 544	0 47
<b>15</b>	0 874	0 555 0	0 765	0 6 6	57	0 660	0 58
<b>16</b>	0 877	1 555 0	1 765	1 606	1 57	0 776	0 70
<b>17</b>	879	0 78606	0 997	0 838	0 80	0 7	0 81
<b>18</b>	882	0 01692	0 9	069	0 03	1 3	0 4
<b>19</b>	0 885	1 0169	1 9	1 069	1 3	0 39	16
<b>20</b>	0 888	4778	461	0 300	0 6	0 354	0 7
<b>21</b>	0 890	1 4778	1 461	1 300	1 6	0 470	0 39
<b>22</b>	0 893	0 47864	0 693	0 531	0 49	0 586	0 50
<b>23</b>	0 896	47864	1 693	1 531	1 49	0 702	0 62
<b>24</b>	899	0 70951	0 9 5	0 762	0 7	0 817	0 74
<b>25</b>	9 1	1 70951	0 157	1 76	1 72	0 049	85
<b>26</b>	0 904	0 94037	1 157	0 993	0 95	0 164	0 08
<b>27</b>	0 907	171 3	389	224	0 18	0 280	0 2
<b>28</b>	0 910	1 171 3	1 389	1 2 4	1 18	396	0 31
<b>29</b>	0 91	0 4 2 9	0 6 1	0 456	0 41	0 51	0 43
<b>30</b>	0 915	1 40209	1 621	1 456	1 41	0 627	54
<b>December 1</b>	0 918	63296	0 853	0 687	0 64	0 743	66
<b>2</b>	0 921	1 63 96	85	1 687	1 64	0 859	0 78
<b>3</b>	0 9 3	0 8638	1 85	0 918	0 88	0 9	0 01
<b>4</b>	0 9 6	0 09468	0 317	149	11	6	0 13
<b>5</b>	9 9	9468	1 317	1 149	1 11	3 2	0 24
<b>6</b>	0 93	0 3 554	0 549	0 380	0 34	0 437	0 35
<b>7</b>	0 934	1 3 554	1 549	1 38	1 34	553	0 47
<b>8</b>	0 937	0 55640	0 781	0 611	0 57	0 669	58
<b>9</b>	0 940	1 5564	0 13	1 611	1 57	785	0 70
<b>10</b>	0 94	0 787 7	1 013	0 84	0 80	0 016	0 81
<b>11</b>	0 945	0 01813	0 45	0 74	0 03	0 132	0 05
<b>12</b>	0 948	1 1813	1 245	1 074	1 3	0 47	0 17
<b>13</b>	0 951	4899	477	0 305	0 26	0 363	0 28
<b>14</b>	953	1 4899	1 477	1 3 5	1 6	0 479	0 39
<b>15</b>	956	0 47985	0 709	0 536	49	0 595	0 51
<b>16</b>	0 959	1 47985	1 7 9	1 536	1 49	0 710	0 62
<b>17</b>	0 96	0 7107	0 941	0 767	0 7	0 8 6	74
<b>18</b>	964	1 71 72	173	1 767	1 72	0 058	0 85
<b>19</b>	0 967	94158	1 173	998	0 95	0 173	0 09
<b>20</b>	0 970	0 17244	0 4 5	0 29	0 18	89	0 0
<b>21</b>	0 973	1 17 44	1 4 5	1 9	1 18	0 405	0 32
<b>22</b>	0 975	0 40330	637	0 461	0 4	0 5 0	0 43
<b>23</b>	978	1 40330	1 637	1 461	1 42	636	0 55
<b>24</b>	0 981	0 63416	0 869	0 692	0 65	0 75	0 66
<b>25</b>	0 984	1 63416	0 101	1 692	1 65	0 868	0 78
<b>26</b>	0 986	86503	1 101	923	0 88	0 099	0 01
<b>27</b>	989	0 9589	0 334	0 154	0 11	15	0 12
<b>28</b>	0 99	1 09589	1 334	1 154	1 11	0 330	0 24
<b>29</b>	0 995	0 3 675	0 566	0 385	0 34	0 446	0 36
<b>30</b>	0 997	1 3 675	1 566	1 385	1 34	0 56	47
<b>31</b>	1 000	0 55762	0 798	0 616	0 57	0 678	0 59
<b>32</b>	1 003	1 5576	0 030	1 616	1 57	0 793	70

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XI

Motion of Mean Longitude for Parts of a Day

1	2	1	2	3	4	3	4
Days	Mean Long.	Days	Mean Long.	Days	Mean Long.	Days	Mean Long.
d	°	d	°	d	°	d	°
0·01	2·03489	0·51	103·77939	0·0001	0·02035	0·0051	1·03779
·02	4·06978	·52	105·81428	2	·04070	52	1·05814
·03	6·10467	·53	107·84917	3	·06105	53	1·07849
·04	8·13956	·54	109·88406	4	·08140	54	1·09884
·05	10·17445	·55	111·91895	5	·10174	55	1·11919
0·06	12·20934	0·56	113·95384	0·0006	0·12209	0·0056	1·13954
·07	14·24423	·57	115·98873	7	·14244	57	1·15989
·08	16·27912	·58	118·02362	8	·16279	58	1·18024
·09	18·31401	·59	120·05851	9	·18314	59	1·20059
·10	20·34890	·60	122·09340	10	·20349	60	1·22093
0·11	22·38379	0·61	124·12829	0·0011	0·22384	0·0061	1·24128
·12	24·41868	·62	126·16318	12	·24419	62	1·26163
·13	26·45357	·63	128·19807	13	·26454	63	1·28198
·14	28·48846	·64	130·23296	14	·28488	64	1·30233
·15	30·52335	·65	132·26785	15	·30523	65	1·32268
0·16	32·55824	0·66	134·30274	0·0016	0·32558	0·0066	1·34303
·17	34·59313	·67	136·33762	17	·34593	67	1·36338
·18	36·62802	·68	138·37251	18	·36628	68	1·38373
·19	38·66291	·69	140·40740	19	·38663	69	1·40407
·20	40·69780	·70	142·44229	20	·40698	70	1·42442
0·21	42·73269	0·71	144·47718	0·0021	0·42733	0·0071	1·44477
·22	44·76758	·72	146·51207	22	·44768	72	1·46512
·23	46·80247	·73	148·54696	23	·46802	73	1·48547
·24	48·83736	·74	150·58185	24	·48837	74	1·50582
·25	50·87225	·75	152·61674	25	·50872	75	1·52617
0·26	52·90714	0·76	154·65163	0·0026	0·52907	0·0076	1·54652
·27	54·94203	·77	156·68652	27	·54942	77	1·56687
·28	56·97692	·78	158·72141	28	·56977	78	1·58721
·29	59·01181	·79	160·75630	29	·59012	79	1·60756
·30	61·04670	·80	162·79119	30	·61047	80	1·62791
0·31	63·08159	0·81	164·82608	0·0031	0·63082	0·0081	1·64826
·32	65·11648	·82	166·86097	32	·65116	82	1·66861
·33	67·15137	·83	168·89586	33	·67151	83	1·68896
·34	69·18626	·84	170·93075	34	·69186	84	1·70931
·35	71·22115	·85	172·96564	35	·71221	85	1·72966
0·36	73·25604	0·86	175·00053	0·0036	0·73256	0·0086	1·75001
·37	75·29093	·87	177·03542	37	·75291	87	1·77035
·38	77·32582	·88	179·07031	38	·77326	88	1·79070
·39	79·36071	·89	181·10520	39	·79361	89	1·81105
·40	81·39560	·90	183·14009	40	·81396	90	1·83140
0·41	83·43049	0·91	185·17498	0·0041	0·83430	0·0091	1·85175
·42	85·46538	·92	187·20987	42	·85465	92	1·87210
·43	87·50027	·93	189·24476	43	·87500	93	1·89245
·44	89·53516	·94	191·27965	44	·89535	94	1·91280
·45	91·57005	·95	193·31454	45	·91570	95	1·93315
0·46	93·60494	0·96	195·34943	0·0046	0·93605	0·0096	1·95349
·47	95·63983	·97	197·38432	47	·95640	97	1·97384
·48	97·67472	·98	199·41921	48	·97675	98	1·99419
·49	99·70961	·99	201·45410	49	·99710	99	2·01454
·50	101·74450	1·00	203·48899	50	1·01745	0·0100	2·03489

For the Arguments A—Q (omitting J), the fraction of a day must be added to the sum of the entries taken from Tables IX, X.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XII

Equation of Longitude

Argument A

A	Lq a tio	3	4	A	Lqua tion	3	4	A	Lq ua tion	3	4	A	Lq ua tion	3	4
0 00	48000	+1694		0 50	93/88	- 375	-31	1 00	8 55	-15 1	+1	1 50	09857	+ 998	+24
0 01	49694	1694	- 1	0 51	93383	434	9	1 01	26746	1495	14	1 51	10878	1046	5
0 02	51387	1691	3	0 52	929 1	49	8	1 02	5 65	1467	14	1 52	11948	1 93	23
0 03	53 75	1684	4	0 53	9 4 4	546	9	1 03	381	1438	16	1 53	13063	1138	3
0 04	54755	1676	4	0 54	918 9	6 3	28	1 04	2 390	1407	15	1 54	4 3	1182	
0 05	564 7	1666	6	0 55	91198	658	7	1 05	0998	1375	18	1 55	15426	1 4	1
0 06	58088	+1654	- 7	0 56	9 513	- 71	7	1 06	19641	-1339	+18	1 56	16671	+1 64	+19
0 07	59735	1641	7	0 57	89775	765	26	1 07	18320	13 4	18	1 57	17954	1303	20
0 08	61369	16 4	10	0 58	88984	817	26	1 08	17034	1 66	2	1 58	19 77	134	19
0 09	6 983	1605	9	0 59	88141	870	27	1 09	15788	1 26	1	1 59	0637	1378	18
0 10	64579	1585	11	0 60	87244	9 1	24	1 10	14583	1185	20	1 60	2 3	1411	16
0 11	66153	+156	-13	0 61	86300	- 968	-24	1 11	13418	-1144	+2	1 61	23459	+1443	+16
0 12	677	1537	13	0 62	853 8	1016	4	1 12	1 96	1 99	23	1 62	4918	1474	15
0 13	69 6	151	14	0 63	84 68	106		1 13	11 20	1054	23	1 63	6407	1503	14
0 14	707 2	148	15	0 64	83184	1107	3	1 14	1 189	1008	4	1 64	7923	15 9	13
0 15	7 189	1451	17	0 65	8 055	1151	22	1 15	09 05	960	5	1 65	9465	1554	1
0 16	736 3	+1418	-17	0 66	80882	1193	-20	1 16	8 70	- 911	+ 5	1 66	31031	+1577	+11
0 17	750 4	1384	18	0 67	79670	1 33	1	1 17	07384	860	26	1 67	3 618	1597	10
0 18	76390	1347	19	0 68	78416	1 74		1 18	0655	809	25	1 68	34225	1616	9
0 19	77718	13 9	19	0 69	771 3	1311	18	1 19	5567	757	27	1 69	35850	1633	8
0 20	790 8	1 7		0 70	75795	1346	18	1 20	05 37	704	27	1 70	37490	1647	7
0 21	80 58	+1 9	- 1	0 71	74431	-1381	-16	1 21	04360	- 649	+29	1 71	39143	+1659	+ 6
0 22	81466	1 86	23	0 72	73033	1414	16	1 22	03740	594	7	1 72	4 808	167	5
0 23	8 6 9	1141		0 73	71604	1444	15	1 23	03173	539	9	1 73	4248	1678	4
0 24	83748	1095	4	0 74	70146	147	14	1 24	663	48	9	1 74	44163	1683	2
0 25	848 9	1048	4	0 75	68661	1499	14	1 25	10	4 4	30	1 75	45848	1687	
0 26	85843	+1	-24	0 76	67148	-15 5	-1	1 26	01816	- 366	+29	1 76	47537	+1690	+ 1
0 27	86819	950	26	0 77	6561	1548	1	1 27	01479	307	30	1 77	492 8	1690	- 2
0 28	87743	899	5	0 78	64053	1569	10	1 28	01 02	49	29	1 78	50916	1686	
0 29	88617	848	7	0 79	62475	1587	9	1 29	0098	191	30	1 79	5 600	168	3
0 30	89438	795	7	0 80	60879	1605	9	1 30	008 1	131	30	1 80	54279	1675	5
0 31	9 06	+ 741	-28	0 81	59 65	-16 1	- 7	1 31	007 0	- 71	+30	1 81	55949	+1666	- 5
0 32	9 919	686	28	0 82	57637	1634	6	1 32	0679	- 12	29	1 82	57609	1655	6
0 33	9 577	630	9	0 83	55997	1645	5	1 33	00696	+ 48	31	1 83	59 58	1641	8
0 34	9 178	573	9	0 84	54347	1654	4	1 34	0775	108	9	1 84	60891	16 5	8
0 35	9 7	515	9	0 85	5 69	1661	4	1 35	0091	167	3	1 85	6 508	1608	9
0 36	93 8	+ 457	- 9	0 86	510 6	-1667	- 3	1 36	1109	+ 7	+30	1 86	64107	+1588	-11
0 37	93636	399	9	0 87	49357	167	- 1	1 37	01365	86	3	1 87	65684	1567	11
0 38	94006	34	3	0 88	47687	167		1 38	01680	345	30	1 88	67 40	1544	13
0 39	94316	81	9	0 89	46017	1669	+	1 39	02 55	403	8	1 89	68771	1518	14
0 40	94568	22	31	0 90	44350	1665		1 40	02486	461	30	1 90	7 275	1489	15
0 41	94759	+ 161	- 3	0 91	4 687	-1660	+ 3	1 41	0 976	+ 519	+ 9	1 91	71749	+1460	-15
0 42	94890	10	30	0 92	41030	165	5	1 42	03523	575	8	1 92	73194	14 9	16
0 43	9496	+ 42	30	0 93	39383	1641	6	1 43	041 6	631	8	1 93	746 7	1396	17
0 44	94974	- 9	31	0 94	37746	1630	5	1 44	04784	687	8	1 94	75986	1361	18
0 45	949 5	79	3	0 95	361 1	1618	7	1 45	05499	74	27	1 95	77329	1324	19
0 46	94816	- 139	-30	0 96	34510	-1603	+ 9	1 46	6267	+ 794	+26	1 96	78634	+1286	-20
0 47	94647	199	30	0 97	3 916	1585	10	1 47	07087	846	26	1 97	799 0	1 46	0
0 48	94419	258	3	0 98	31341	1564	11	1 48	07959	898	6	1 98	811 6	1 05	21
0 49	9413	316	9	0 99	9788	1543	10	1 49	08883	949	25	1 99	8 310	1162	
0 50	93788	- 375	-31	1 00	8 55	-15 1	+1	1 50	09857	+ 998	+24	2 00	8345	+1117	- 3

Add 10 t t 8000

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XII continued

Equation of Longitude

Argument A

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$
d	°			d	°			d	°			d	°		
2'00	83450	+1117	-23	2'50	71530	-1450	-13	3'00	03355	-522	+29	3'50	43691	+1687	+3
2'01	84544	1071	23	2'51	70067	1478	15	3'01	02862	464	29	3'51	45380	1692	+3
2'02	85592	1024	24	2'52	68574	1506	13	3'02	02427	406	29	3'52	47075	1695	-1
2'03	86592	976	24	2'53	67055	1531	12	3'03	02050	348	30	3'53	48769	1694	1
2'04	87544	926	26	2'54	65512	1554	11	3'04	01732	289	29	3'54	50462	1692	1
2'05	88444	875	26	2'55	63948	1574	10	3'05	01472	231	30	3'55	52153	1688	3
2'06	89293	+823	-27	2'56	62365	-1593	-10	3'06	01271	-172	+30	3'56	53838	+1682	-4
2'07	90089	770	26	2'57	60763	1610	8	3'07	01129	112	30	3'57	55516	1673	6
2'08	90833	716	28	2'58	59146	1624	7	3'08	01047	-52	31	3'58	57183	1661	7
2'09	91521	661	28	2'59	57515	1637	6	3'09	01026	+9	30	3'59	58837	1648	6
2'10	92154	606	28	2'60	55873	1648	6	3'10	01065	69	30	3'60	60479	1634	9
2'11	92732	+550	-29	2'61	54220	-1658	-5	3'11	01164	+128	+29	3'61	62104	+1615	-10
2'12	93253	493	28	2'62	52558	1664	2	3'12	01321	188	31	3'62	63709	1596	9
2'13	93718	436	30	2'63	50893	1666	1	3'13	01539	248	30	3'63	65296	1576	12
2'14	94124	377	30	2'64	49226	1670	-3	3'14	01817	308	30	3'64	66860	1551	13
2'15	94471	318	30	2'65	47554	1671	+1	3'15	02154	367	30	3'65	68398	1525	14
2'16	94759	+259	-30	2'66	45884	-1669	+2	3'16	02551	+426	+29	3'66	69909	+1497	-14
2'17	94988	200	29	2'67	44217	1664	3	3'17	03005	484	30	3'67	71392	1468	15
2'18	95159	140	31	2'68	42556	1658	3	3'18	03519	542	28	3'68	72845	1436	17
2'19	95268	81	29	2'69	40901	1650	5	3'19	04089	599	29	3'69	74264	1402	17
2'20	95320	+21	31	2'70	39256	1640	6	3'20	04716	655	28	3'70	75649	1367	19
2'21	95310	-39	-29	2'71	37622	-1628	+7	3'21	05398	+710	+28	3'71	76997	+1330	-18
2'22	95243	98	31	2'72	36001	1614	7	3'22	06136	765	27	3'72	78309	1292	20
2'23	95115	158	30	2'73	34394	1598	9	3'23	06928	819	27	3'73	79581	1251	21
2'24	94927	217	29	2'74	32806	1579	9	3'24	07774	871	25	3'74	80811	1209	22
2'25	94681	276	30	2'75	31236	1560	11	3'25	08670	922	26	3'75	81998	1165	22
2'26	94375	-335	-29	2'76	29687	-1537	+12	3'26	09617	+972	+25	3'76	83141	+1121	-23
2'27	94012	392	29	2'77	28162	1513	12	3'27	10614	1022	25	3'77	84239	1075	24
2'28	93591	450	29	2'78	26661	1487	14	3'28	11661	1070	23	3'78	85290	1027	24
2'29	93112	507	28	2'79	25188	1459	14	3'29	12754	1117	24	3'79	86293	978	25
2'30	92577	563	28	2'80	23743	1430	16	3'30	13894	1162	22	3'80	87246	928	26
2'31	91986	-619	-28	2'81	22329	-1399	+16	3'31	15077	+1205	+22	3'81	88148	+876	-26
2'32	91340	674	28	2'82	20946	1366	18	3'32	16304	1247	20	3'82	88998	823	27
2'33	90639	728	27	2'83	19598	1330	19	3'33	17571	1288	21	3'83	89794	770	27
2'34	89885	781	27	2'84	18287	1294	18	3'34	18879	1328	20	3'84	90537	716	28
2'35	89078	833	26	2'85	17011	1256	20	3'35	20226	1365	18	3'85	91225	660	28
2'36	88220	-883	-25	2'86	15775	-1216	+21	3'36	21608	+1399	+17	3'86	91857	+604	-29
2'37	87312	933	25	2'87	14580	1174	21	3'37	23024	1433	17	3'87	92432	547	28
2'38	86355	981	24	2'88	13427	1131	22	3'38	24474	1465	15	3'88	92951	489	30
2'39	85350	1029	24	2'89	12318	1087	22	3'39	25954	1494	14	3'89	93410	430	29
2'40	84297	1075	22	2'90	11253	1042	24	3'40	27462	1522	14	3'90	93811	372	30
2'41	83200	-1119	-22	2'91	10235	-995	+24	3'41	28997	+1548	+13	3'91	94153	+313	-29
2'42	82060	1162	22	2'92	09264	947	25	3'42	30558	1573	12	3'92	94437	254	30
2'43	80876	1205	21	2'93	08342	896	26	3'43	32142	1594	10	3'93	94661	194	30
2'44	79651	1245	20	2'94	07472	846	25	3'44	33746	1614	10	3'94	94825	134	30
2'45	78387	1284	20	2'95	06651	794	27	3'45	35370	1632	8	3'95	94929	74	30
2'46	77084	-1321	-18	2'96	05884	-741	+26	3'46	37009	+1647	+8	3'96	94973	+14	-30
2'47	75746	1356	18	2'97	05169	688	27	3'47	38664	1661	6	3'97	94957	-46	30
2'48	74373	1390	17	2'98	04508	632	29	3'48	40331	1672	5	3'98	94881	106	30
2'49	72967	1422	16	2'99	03905	577	27	3'49	42007	1680	4	3'99	94746	163	28
2'50	71530	-1450	-13	3'00	03355	-522	+29	3'50	43691	+1687	+3	4'00	94555	-220	-29

Added Constant: 0°48000.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XIII

Equations of Longitude

XIV

B	Equation	$\Delta$ o d i
0 00	0 0300	+ 4 0
05	3 0	3 5
10	336	2 7
15	347	+ 1 0
20	35	- 3
25	344	0
0 30	0 0329	- 4 0
35	3 5	5 5
40	273	7 3
45	235	7 5
50	196	8 0
0 55	0 00156	- 8 0
60	119	6 8
65	88	5 5
70	65	4 0
75	51	- 1 5
0 80	0 00048	+ 0 3
85	55	2 5
90	73	4 3
95	1 0	6 0
1 00	135	7 7
1 05	0 178	+ 9 0
10	4	9 8
15	74	10 5
20	3 5	1 3
25	375	1 0
1 30	0 004	+ 9
35	464	8 0
40	500	6 3
45	5 7	4 5
50	545	5
1 55	0 0055	+ 5
60	549	- 1 8
65	535	3 5
70	51	5 3
75	481	7 0
1 80	0 0 444	- 7 8
85	405	8 0
90	365	8 0
95	3 8	7 0
2 00	96	5 7
2 05	00 7	- 4 0
10	56	- 2 3
15	250	0 0
20	253	+ 1 5
25	64	3 0
2 30	0 00280	+ 3 8
35	300	4 0
40	319	3 5
45	336	3 0
2 50	0 00347	+ 1 3

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C	Equation	$\Delta$ o d o	C	Equation	$\Delta$ o d i
0 00	0 00600	+ 18 9	1 00	0 00389	- 17 4
02	638	18 9	02	355	16 8
04	675	18 7	04	3	16 1
06	713	18 5	06	9	15 4
08	749	18 1	08	6	14 5
10	785	17 7	10	32	13 7
0 12	0 008	+ 17	1 12	002 6	- 1 8
14	854	16 6	14	181	11 7
16	886	15 9	16	159	10 6
18	918	15	18	139	9 5
20	947	14 3	20	1 1	8 3
0 22	0 00975	+ 13 4	1 22	0 00106	- 7 1
24	1001	1 5	24	93	5 8
26	1025	11 4	26	83	4 5
28	1 46	10 3	28	75	3 2
30	1066	9 2	30	70	1 9
0 32	0 01083	+ 8 0	1 32	00068	0 5
34	1097	6 7	34	69	+ 0 8
36	11 9	5 5	36	72	2
38	1119	4	38	78	3 5
40	1126	9	40	86	4 8
0 42	0 01130	+ 1 5	1 42	0 00 97	+ 6 1
44	113	+	44	110	7 3
46	1131	- 1 2	46	1 6	8 6
48	11 7	5	48	144	9 7
50	11 1	3 8	50	165	10 9
0 52	0 01112	- 5 1	1 52	0 0188	+ 11 9
54	1101	6 4	54	21	1 9
56	1087	7 7	56	39	13 9
58	1070	8 9	58	268	14 7
60	1051	10 0	60	98	15 5
0 62	0 01030	- 11 1	1 62	0 00330	+ 16 3
64	1007	12 2	64	363	16 9
66	981	13 2	66	398	17 5
68	954	14 1	68	43	17 9
70	9 5	15 0	70	468	18 3
0 72	0 894	- 15 7	1 72	0 00506	+ 18 6
74	86	16 4	74	543	18 8
76	8 9	17 1	76	580	18 9
78	794	17 6	78	618	18 9
80	758	18 0	80	656	18 8
0 82	0 00722	- 18 4	1 82	0 00693	+ 18 6
84	685	18 7	84	730	18 3
86	647	18 8	86	767	18 0
88	6 9	18 9	88	80	17 5
90	57	18 9	90	836	16 9
0 92	0 00534	- 18 7	1 92	0087	+ 16 3
94	497	18 5	94	902	15 6
96	46	18	96	932	14 8
98	424	17 8	98	961	13 9
1 00	0 00389	- 17 4	2 00	0 00987	+ 13 0

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# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XV

Equations of Longitude

XVI

1	2	3	1	2	3
D	Equation	$\Delta$ 0 <sup>d</sup> 01	D	Equation	$\Delta$ 0 <sup>d</sup> 01
d	°		d	°	
0 <sup>h</sup> 00	0 <sup>m</sup> 00500	+ 15,1	1 <sup>h</sup> 00	0 <sup>m</sup> 00330	- 13,9
02	530	15,1	02	303	13,4
04	560	14,9	04	276	12,9
06	590	14,8	06	251	12,3
08	619	14,5	08	227	11,6
10	648	14,1	10	205	10,9
0 <sup>h</sup> 12	0 <sup>m</sup> 00676	+ 13,7	1 <sup>h</sup> 12	0 <sup>m</sup> 00184	- 10,1
14	703	13,3	14	164	9,3
16	729	12,7	16	147	8,5
18	754	12,1	18	131	7,5
20	777	11,5	20	117	6,6
0 <sup>h</sup> 22	0 <sup>m</sup> 00799	+ 10,7	1 <sup>h</sup> 22	0 <sup>m</sup> 00104	- 5,6
24	820	10,0	24	94	4,6
26	839	9,1	26	86	3,6
28	857	8,2	28	80	2,5
30	872	7,3	30	76	1,5
0 <sup>h</sup> 32	0 <sup>m</sup> 00886	+ 6,4	1 <sup>h</sup> 32	0 <sup>m</sup> 00074	- 0,4
34	898	5,4	34	74	+ 0,7
36	907	4,4	36	76	1,8
38	915	3,3	38	81	2,8
40	921	2,3	40	88	3,9
0 <sup>h</sup> 42	0 <sup>m</sup> 00924	+ 1,2	1 <sup>h</sup> 42	0 <sup>m</sup> 00097	+ 4,9
44	925	+ 0,1	44	107	5,9
46	924	- 1,0	46	120	6,9
48	921	2,0	48	135	7,8
50	916	3,1	50	151	8,7
0 <sup>h</sup> 52	0 <sup>m</sup> 00909	- 4,1	1 <sup>h</sup> 52	0 <sup>m</sup> 00170	+ 9,6
54	900	5,1	54	190	10,4
56	889	6,1	56	211	11,1
58	875	7,1	58	234	11,8
60	860	8,0	60	258	12,5
0 <sup>h</sup> 62	0 <sup>m</sup> 00843	- 8,9	1 <sup>h</sup> 62	0 <sup>m</sup> 00284	+ 13,0
64	825	9,8	64	310	13,5
66	804	10,5	66	338	14,0
68	783	11,3	68	367	14,4
70	759	12,0	70	396	14,6
0 <sup>h</sup> 72	0 <sup>m</sup> 00735	- 12,7	1 <sup>h</sup> 72	0 <sup>m</sup> 00425	+ 14,9
74	709	13,2	74	455	15,0
76	682	13,6	76	485	15,1
78	654	14,1	78	516	15,1
80	626	14,4	80	546	15,0
0 <sup>h</sup> 82	0 <sup>m</sup> 00597	- 14,7	1 <sup>h</sup> 82	0 <sup>m</sup> 00576	+ 14,9
84	567	14,9	84	605	14,6
86	537	15,1	86	634	14,3
88	507	15,1	88	663	14,0
90	477	15,1	90	690	13,5
0 <sup>h</sup> 92	0 <sup>m</sup> 00446	- 15,0	1 <sup>h</sup> 92	0 <sup>m</sup> 00717	+ 13,0
94	417	14,8	94	742	12,4
96	387	14,6	96	766	11,8
98	358	14,2	98	789	11,1
1 <sup>h</sup> 00	0 <sup>m</sup> 00330	- 13,9	2 <sup>h</sup> 00	0 <sup>m</sup> 00811	+ 10,3

Added Constant: 0<sup>m</sup>00500.

1	2	3
E	Equation	$\Delta$ 0 <sup>d</sup> 01
d	°	
0 <sup>h</sup> 00	0 <sup>m</sup> 00200	+ 6,8
04	227	6,7
08	253	6,5
12	279	6,2
16	302	5,7
20	324	5,1
0 <sup>h</sup> 24	0 <sup>m</sup> 00343	+ 4,4
28	359	3,7
32	372	2,8
36	382	1,9
40	388	1,0
0 <sup>h</sup> 44	0 <sup>m</sup> 00390	+ 0,1
48	389	- 0,9
52	383	1,8
56	374	2,7
60	361	3,6
0 <sup>h</sup> 64	0 <sup>m</sup> 00345	- 4,4
68	326	5,1
72	305	5,6
76	281	6,1
80	256	6,4
0 <sup>h</sup> 84	0 <sup>m</sup> 00230	- 6,7
88	203	6,8
92	176	6,7
96	150	6,5
1 <sup>h</sup> 00	124	6,2
1 <sup>h</sup> 04	0 <sup>m</sup> 00100	- 5,7
08	78	5,2
12	59	4,5
16	42	3,8
20	29	2,9
1 <sup>h</sup> 24	0 <sup>m</sup> 00019	- 2,0
28	12	1,1
32	10	- 0,2
36	11	+ 0,8
40	16	1,7
1 <sup>h</sup> 44	0 <sup>m</sup> 00025	+ 2,6
48	37	3,5
52	53	4,3
56	71	5,0
60	92	5,6
1 <sup>h</sup> 64	0 <sup>m</sup> 00116	+ 6,1
68	141	6,4
72	167	6,7
76	194	6,8
80	221	6,7
1 <sup>h</sup> 84	0 <sup>m</sup> 00248	+ 6,5
88	273	6,2
92	297	5,8
96	319	5,3
2 <sup>h</sup> 00	0 <sup>m</sup> 00339	+ 4,6

Added Constant: 0<sup>m</sup>00200.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XVII

Equations of Longitude

XVIII

F	Equation	3	F	Equation	3
		$\Delta_{rd}$			$\Delta_{rd}$
0	0 800	- 11 3	<sup>d</sup> 250	0 01303	+ 8 1
5	743	11	255	134	7 4
10	688	11 1	260	1377	6 8
15	63	11	265	14 9	6
20	579	10 7	270	1437	5 3
25	5 5	1 4	275	1462	4 5
30	0 474	- 10	280	0 1481	+ 3 6
35	4 5	9 7	285	1498	8
40	378	9 1	290	1509	1 9
45	334	8 6	295	1517	1 1
50	93	8 0	300	1520	+ 0 1
55	0 00 54	- 7 3	305	0 01518	- 0 8
60	19	6 6	310	1513	1 6
65	188	5 9	315	15	5
70	160	5	320	1488	3 3
75	136	4 4	325	1469	4
80	0 0 116	- 3 5	330	0 01446	- 5 0
85	1 1	2 7	335	1419	5 7
90	9	1 8	340	1389	6 5
95	83	- 0 9	345	1355	7
100	8	0 0	350	1317	7 8
105	0 00082	+ 0 8	355	0 01 77	- 8 5
110	88	7	360	1 33	9 0
115	98	6	365	1187	9 5
120	113	3 4	370	1138	10
125	133	4 3	375	1087	10 3
130	0 00156	+ 5	380	0 01035	- 10 7
135	184	5 9	385	981	10 9
140	15	6 6	390	926	11 1
145	49	7 3	395	87	11
150	287	8 0	400	813	11 3
155	0 003 8	+ 8 5	405	0 00757	- 11 2
160	37	9 1	410	7 1	11
165	418	9 6	415	645	11 0
170	468	10 0	420	591	10 8
175	518	10 4	425	537	10 5
180	057	+ 1 7	430	0 00486	- 1 1
185	6 6	10 9	435	436	9 7
190	681	11	440	389	9 3
195	737	11	445	344	8 7
200	793	11 3	450	30	8 1
205	0 0 85	+ 11 2	455	0 00262	- 7 5
210	906	11	460	27	6 8
215	961	11	465	195	6 1
220	1015	10 7	470	166	5 4
225	1 69	10 5	475	141	4 5
230	0 011 0	+ 10 1	480	0 00120	- 3 7
235	1170	9 7	485	104	2 9
240	1 16	9 2	490	92	0
245	126	8 6	495	84	1 1
250	01303	+ 8 1	500	0 00081	- 0 2

Add d C t t 008

G	Equation	3	G	Equation	3
		$\Delta_{rd}$			$\Delta_{rd}$
<sup>d</sup> 0	00400	+ 5 4	<sup>d</sup> 250	0 00 87	- 5 2
5	4 7	5 4	255	261	5 1
10	454	5 4	260	237	4 9
15	48	5 3	265	1	4 8
20	5 7	5	270	189	4 6
25	533	5 1	275	167	4 4
30	0 0 558	+ 4 9	280	0 00146	- 4 1
35	582	4 8	285	125	3 9
40	606	4 6	290	106	3 6
45	629	4 4	295	89	3 3
50	650	4 2	300	73	3 0
55	0 00670	+ 4	305	0 00059	- 2 7
60	689	3 7	310	46	4
65	707	3 4	315	35	1
70	7 3	3 1	320	26	1 7
75	738	2 8	325	18	1 3
80	0 00751	+ 5	330	0 0013	- 1 0
85	763		335	8	0 6
90	77	1 8	340	7	- 0 3
95	781	1 4	345	6	+ 0 1
100	786	1 1	350	8	0 5
105	0 00791	+ 0 7	355	0 00011	+ 0 9
110	793	+ 0 4	360	16	1 2
115	794	0 0	365	3	1 6
120	793	0 4	370	3	0
125	790	0 8	375	43	3
130	0 00785	- 1 1	380	0 00055	+ 6
135	778	1 5	385	69	2 9
140	770	1 8	390	84	3
145	759	2	395	101	3 6
150	748	2 5	400	120	3 8
155	0 0735	- 9	405	0 00139	+ 4 0
160	720	3	410	160	4 3
165	7 3	3 5	415	182	4 5
170	685	3 8	420	205	4 7
175	666	4 0	425	2 9	4 9
180	0 00645	- 4 2	430	0 00254	+ 5 0
185	624	4 5	435	79	5 2
190	600	4 7	440	305	5 3
195	577	4 8	445	332	5 4
200	552	5 0	450	359	5 4
205	0 00527	- 5	455	0 00386	+ 5 4
210	5 1	5 3	460	413	5 4
215	475	5 3	465	440	5 4
220	448	5 4	470	466	5 3
225	421	5 4	475	493	5 3
230	0 00394	- 5 4	480	0 00519	+ 5 2
235	366	5 4	485	545	5 0
240	340	5 4	490	569	4 9
245	313	5 3	495	593	4 7
250	0 00287	- 5 2	500	0 00616	+ 4 5

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# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

**XIX**

**Equations of Longitude**

**XX**

1	2	3	1	2	3
H	Equation	$\Delta_{rd}$	H	Equation	$\Delta_{rd}$
d	o		d	o	
0	0°01000	+ 11,8	250	0°00896	- 11,7
5	1059	11,8	255	837	11,6
10	1118	11,7	260	780	11,4
15	1176	11,6	265	723	11,2
20	1233	11,4	270	667	11,0
25	1290	11,2	275	613	10,7
30	0°01346	+ 10,9	280	0°00561	- 10,3
35	1399	10,6	285	510	9,9
40	1451	10,2	290	462	9,5
45	1502	9,8	295	416	9,0
50	1549	9,4	300	372	8,5
55	0°01595	+ 8,9	305	0°00331	- 8,0
60	1638	8,4	310	292	7,3
65	1678	7,8	315	257	6,7
70	1716	7,2	320	225	6,1
75	1751	6,6	325	196	5,4
80	0°01782	+ 5,9	330	0°00171	- 4,8
85	1810	5,3	335	149	4,0
90	1835	4,6	340	130	3,3
95	1856	3,9	345	115	2,6
100	1873	3,1	350	105	1,8
105	0°01887	+ 2,4	355	0°00098	- 1,0
110	1897	1,6	360	95	- 0,3
115	1903	0,9	365	95	+ 0,5
120	1906	+ 0,1	370	100	1,3
125	1904	- 0,7	375	108	2,0
130	0°01899	- 1,4	380	0°00120	+ 2,8
135	1890	2,2	385	136	3,5
140	1877	2,9	390	155	4,2
145	1861	3,7	395	178	5,0
150	1840	4,4	400	204	5,6
155	0°01816	- 5,1	405	0°00234	+ 6,3
160	1789	5,8	410	268	6,9
165	1759	6,5	415	303	7,5
170	1724	7,1	420	343	8,1
175	1688	7,7	425	385	8,6
180	0°01648	- 8,2	430	0°00430	+ 9,2
185	1605	8,8	435	476	9,6
190	1560	9,3	440	526	10,0
195	1513	9,7	445	577	10,4
200	1463	10,1	450	630	10,8
205	0°01411	- 10,5	455	0°00685	+ 11,1
210	1358	10,8	460	741	11,3
215	1303	11,1	465	797	11,5
220	1246	11,3	470	855	11,6
225	1190	11,5	475	914	11,7
230	0°01131	- 11,7	480	0°00973	+ 11,8
235	1073	11,8	485	1032	11,8
240	1014	11,8	490	1091	11,7
245	954	11,8	495	1150	11,6
250	0°00896	- 11,7	500	0°01207	+ 11,5

Added Constant : 0°01000.

1	2	3	1	2	3
I	Equation	$\Delta_{rd}$	I	Equation	$\Delta_{rd}$
d	o		d	o	
0	0°00400	+ 4,6	250	0°00367	- 4,6
5	423	4,6	255	344	4,5
10	446	4,6	260	322	4,5
15	469	4,5	265	299	4,4
20	491	4,4	270	278	4,4
25	513	4,4	275	257	4,2
30	0°00534	+ 4,2	280	0°00236	- 4,1
35	555	4,1	285	216	3,9
40	575	4,0	290	197	3,8
45	595	3,8	295	178	3,6
50	613	3,6	300	161	3,4
55	0°00632	+ 3,5	305	0°00145	- 3,2
60	648	3,3	310	130	3,0
65	664	3,1	315	115	2,7
70	679	2,8	320	102	2,5
75	693	2,6	325	90	2,2
80	0°00704	+ 2,3	330	0°00080	- 2,0
85	716	2,1	335	71	1,7
90	725	1,8	340	63	1,4
95	734	1,5	345	57	1,1
100	741	1,3	350	52	0,8
105	0°00746	+ 1,0	355	0°00048	- 0,6
110	750	0,7	360	46	- 0,3
115	753	0,4	365	46	0,0
120	754	+ 0,1	370	47	+ 0,3
125	754	- 0,2	375	49	0,6
130	0°00752	- 0,5	380	0°00053	+ 0,9
135	749	0,8	385	58	1,2
140	744	1,1	390	65	1,5
145	738	1,4	395	74	1,8
150	730	1,7	400	83	2,0
155	0°00721	- 1,9	405	0°00094	+ 2,3
160	711	2,2	410	106	2,6
165	700	2,5	415	119	2,8
170	686	2,7	420	134	3,0
175	672	2,9	425	150	3,3
180	0°00657	- 3,2	430	0°00166	+ 3,4
185	641	3,4	435	184	3,6
190	623	3,5	440	203	3,8
195	606	3,7	445	223	4,0
200	586	3,9	450	243	4,1
205	0°00566	- 4,1	455	0°00264	+ 4,2
210	546	4,2	460	285	4,3
215	525	4,3	465	307	4,4
220	503	4,4	470	329	4,5
225	481	4,5	475	351	4,6
230	0°00458	- 4,5	480	0°00374	+ 4,6
235	436	4,6	485	397	4,6
240	413	4,6	490	420	4,6
245	389	4,6	495	443	4,6
250	0°00367	- 4,6	500	0°00466	+ 4,5

Added Constant : 0°00400.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXI

Equation of Longitude

Argument J

J	Equation	$\Delta$ o	J	Equation	$\Delta$ o	J	Equation	$\Delta$ o	J	Equation	$\Delta$ o
1850 0	00576	- 1 8	1860 0	00304	- 1 5	1870 0	00488	- 3 3	1880 0	00614	- 9 8
2	576	+ 1 8	2	303	+ 8	2	480	4 5	2	594	9 5
4	583	4 3	4	3 7	2 5	4	470	5 0	4	577	8 5
6	593	4 8	6	313	4 5	6	460	6 0	6	560	7 3
8	60	5 3	8	3 5	6 3	8	446	7 8	8	548	5 8
1851 0	000614	+ 6 0	1861 0	00338	+ 7 5	1871 0	0004 9	8 8	1881 0	000537	5 3
2	626	6 3	2	355	9 5	2	411	8 8	2	527	4 0
4	639	7 3	4	376	10 3	4	394	8 3	4	51	3 8
6	655	8 5	6	396	10 5	6	378	8 3	6	51	3 0
8	673	8 8	8	418	12 0	8	361	8 8	8	509	1
1852 0	0 690	+ 8 5	1862 0	000444	+13 5	1872 0	000343	- 8 8	1882 0	000508	- 0 8
2	707	8 0	2	47	13 5	2	3 6	7 3	2	506	0 8
4	7	7 8	4	498	1 8	4	314	5 3	4	505	+ 3
6	738	7 3	6	523	12 3	6	305	3 5	6	507	0 8
8	751	6 3	8	547	1	8	300	- 1 5	8	508	0 8
1853 0	0 763	+ 6 3	1863 0	00 571	+10 8	1873 0	000299	+ 0 3	1883 0	000510	+ 1 3
2	776	5 3	2	590	9 0	2	3 1	8	2	513	2 0
4	784	4 0	4	607	7 8	4	310	5 8	4	518	2 5
6	79	4	6	6 1	6 3	6	3 4	8	6	523	2
8	800	+ 3	8	63	4 8	8	342	9 5	8	5 6	2 8
1854 0	0 801	0 0	1864 0	000640	+ 3 8	1874 0	00 362	+11 3	1884 0	000534	+ 4 5
2	800	- 0 3	2	647	+ 1 3	2	387	12 8	2	544	4 8
4	800	1 0	4	645	- 1 3	4	413	14 3	4	553	4 0
6	796	8	6	642	3 8	6	44	15 3	6	560	4 3
8	789	3 3	8	634	4 5	8	475	17 3	8	570	5 8
1855 0	783	- 3 8	1865 0	006 4	- 5 8	1875 0	000511	+18 0	1885 0	000583	+ 6 0
2	774	5 0	2	611	7	2	546	17 5	2	594	6 0
4	763	6 3	4	596	7 3	4	581	18 0	4	607	6
6	749	7 3	6	58	7	6	618	17 8	6	618	5 3
8	734	8 3	8	568	8 0	8	65	17	8	628	5 8
1856 0	000716	9 5	1866 0	00055	- 8 8	1876 0	000686	+15 8	1886 0	000641	+ 7 3
2	696	10 5	2	533	7 8	2	715	14 3	2	657	8 0
4	674	11 3	4	519	6 3	4	743	12 5	4	673	7 0
6	651	11 5	6	508	5 8	6	765	9 5	6	685	5 8
8	6 8	1 5	8	496	5 8	8	781	7 3	8	696	5 3
1857 0	000605	-12 3	1867 0	0485	- 4 5	1877 0	000794	+ 5 8	1887 0	00 706	+ 5 3
2	579	13	2	478	2 8	2	8 4	3 5	2	717	5 0
4	553	1 8	4	474	1 5	4	808	+ 1 5	4	7 6	4 0
6	5 8	1 0	6	47	- 0 5	6	81	- 8	6	733	3 0
8	505	1	8	47	0	8	805	3 5	8	738	3 5
1858 0	000480	-13 0	1868 0	00047	+ 0 5	1878 0	0 0796	- 5 3	1888 0	000747	+ 4 3
2	453	1 8	2	474	1 8	2	784	7	2	755	3 0
4	4 9	11 5	4	479	3	4	768	7 8	4	759	1 8
6	4 7	11 3	6	483	0	6	753	8 0	6	76	1 5
8	384	11 0	8	487	0	8	736	9 5	8	765	1 0
1859 0	0 0363	- 9 8	1869 0	000491	+ 1 8	1879 0	000715	-10 3	1889 0	000766	+ 0 8
2	345	8 0	2	494	+ 1 0	2	695	10 0	2	768	1 0
4	331	6 3	4	495	0 0	4	675	10 5	4	770	1 0
6	320	5 5	6	494	- 5	6	653	10 5	6	772	1 0
8	309	4 0	8	493	1 5	8	633	9 8	8	774	0 8
1860 0	000304	- 1 5	1870 0	000488	- 3 3	1880 0	000614	- 9 8	1890 0	000775	+ 0 3

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# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXI continued

Equation of Longitude

Argument J

1	2	3	1	2	3	1	2	3	1	2	3
J	Equation	$\Delta$ 0°·1	J	Equation	$\Delta$ 0°·1	J	Equation	$\Delta$ 0°·1	J	Equation	$\Delta$ 0°·1
1890·0	0°00775	+ 0,3	1900·0	0°00818	+ 3,5	1910·0	0°00485	+ 7,8	1920·0	0°00545	+ 8,8
·2	775	0,0	·2	823	+ 1,3	·2	502	9,0	·2	565	10,3
·4	775	+ 0,3	·4	823	- 1,3	·4	521	10,5	·4	586	10,5
·6	776	0,0	·6	818	3,5	·6	544	12,0	·6	607	11,3
·8	775	- 1,0	·8	809	6,0	·8	569	13,3	·8	631	13,5
1891·0	0°00772	- 0,5	1901·0	0°00794	- 7,8	1911·0	0°00597	+ 13,8	1921·0	0°00661	+ 15,3
·2	773	0,3	·2	778	9,0	·2	624	12,8	·2	692	14,8
·4	771	1,0	·4	758	10,3	·4	648	12,0	·4	720	12,8
·6	769	1,8	·6	737	10,8	·6	672	12,0	·6	743	11,3
·8	764	2,8	·8	715	11,5	·8	696	11,8	·8	765	11,3
1892·0	0°00758	- 3,5	1902·0	0°00691	- 12,0	1912·0	0°00719	+ 11,0	1922·0	0°00788	+ 11,0
·2	750	4,0	·2	667	12,0	·2	740	9,8	·2	809	10,0
·4	742	4,8	·4	643	11,0	·4	758	9,0	·4	828	9,5
·6	731	6,3	·6	623	10,0	·6	776	8,3	·6	847	9,5
·8	717	7,5	·8	603	9,8	·8	791	7,3	·8	866	8,5
1893·0	0°00701	- 8,8	1903·0	0°00584	- 8,8	1913·0	0°00805	+ 6,0	1923·0	0°00881	+ 6,3
·2	682	9,8	·2	568	7,3	·2	815	3,5	·2	891	3,8
·4	662	10,3	·4	555	6,0	·4	819	1,8	·4	896	2,5
·6	641	11,0	·6	544	4,5	·6	822	+ 0,5	·6	901	+ 1,5
·8	618	12,3	·8	537	3,5	·8	821	- 1,5	·8	902	- 0,3
1894·0	0°00592	- 13,5	1904·0	0°00530	- 1,8	1914·0	0°00816	- 2,8	1924·0	0°00900	- 1,8
·2	564	13,0	·2	529	0,5	·2	810	3,8	·2	895	2,5
·4	538	13,5	·4	528	- 0,3	·4	801	4,8	·4	890	3,0
·6	512	13,0	·6	528	+ 0,3	·6	791	5,3	·6	883	4,3
·8	488	12,5	·8	529	1,3	·8	780	5,8	·8	873	4,8
1895·0	0°00463	- 12,3	1905·0	0°00533	+ 1,5	1915·0	0°00768	- 6,8	1925·0	0°00864	- 4,3
·2	441	10,5	·2	535	0,8	·2	753	8,3	·2	856	4,5
·4	421	9,0	·4	536	0,5	·4	735	8,5	·4	846	4,3
·6	405	6,8	·6	537	0,5	·6	719	8,0	·6	839	3,3
·8	394	4,3	·8	538	+ 0,5	·8	703	9,0	·8	833	3,0
1896·0	0°00388	- 1,8	1906·0	0°00539	- 0,3	1916·0	0°00683	- 9,3	1926·0	0°00827	- 2,0
·2	387	+ 0,5	·2	537	1,5	·2	664	9,5	·2	825	1,5
·4	390	3,0	·4	533	2,8	·4	645	9,3	·4	821	1,8
·6	399	5,0	·6	526	3,5	·6	627	8,8	·6	818	0,8
·8	410	7,0	·8	519	3,8	·8	610	8,8	·8	818	- 0,3
1897·0	0°00427	+ 9,8	1907·0	0°00511	- 4,3	1917·0	0°00592	- 9,3	1927·0	0°00817	+ 0,5
·2	449	11,8	·2	502	5,3	·2	573	8,5	·2	820	1,5
·4	474	13,3	·4	490	6,0	·4	558	7,5	·4	823	1,8
·6	502	14,0	·6	478	5,8	·6	543	6,5	·6	827	1,8
·8	530	15,0	·8	467	4,8	·8	532	6,0	·8	830	1,3
1898·0	0°00562	+ 16,5	1908·0	0°00459	- 4,3	1918·0	0°00519	- 5,8	1928·0	0°00832	+ 1,0
·2	596	16,8	·2	450	3,3	·2	509	3,8	·2	834	+ 0,5
·4	629	16,3	·4	446	1,8	·4	504	2,5	·4	834	- 0,5
·6	661	15,8	·6	443	1,0	·6	499	1,8	·6	832	1,8
·8	692	15,5	·8	442	0,8	·8	497	- 0,3	·8	827	3,3
1899·0	0°00723	+ 15,0	1909·0	0°00440	- 0,8	1919·0	0°00498	+ 1,3	1929·0	0°00819	- 5,0
·2	752	13,5	·2	439	+ 0,8	·2	502	2,3	·2	807	6,5
·4	777	11,0	·4	443	4,3	·4	507	4,0	·4	793	7,5
·6	796	8,0	·6	456	7,0	·6	518	5,8	·6	777	8,3
·8	809	5,0	·8	471	7,3	·8	530	6,8	·8	760	8,8
1900·0	0°00818	+ 3,5	1910·0	0°00485	+ 7,8	1920·0	0°00545	+ 8,8	1930·0	0°00742	- 10,3

Added Constant : 0°00600.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXI continued

Equation of Longitude

Argument J

J	Equation	$\Delta$	J	Equation	$\Delta$	J	Equation	$\Delta$	J	Equation	$\Delta$
1930 0	074	-1 3	1940 0	00568	-8 3	1950 0	0 00715	+0 5	1960 0	0 00911	-4 3
2	719	11 5	2	553	6 5	2	715	0 0	2	899	5 5
4	696	11 5	4	54	5 0	4	715	-0 3	4	889	6 5
6	673	1 3	6	533	4 3	6	714	1 8	6	873	8 5
8	647	1 8	8	5 5	3 3	8	7 8	2 5	8	855	9 3
1931 0	0 006	-1 3	1941 0	0 005 0	-2 3	1951 0	0 07 4	-8	1961 0	0 00836	-9 3
2	598	11 0	2	516	2 5	2	697	3 8	2	818	9 5
4	578	9	4	510	2 5	4	689	5	4	798	9 5
6	56	7	6	506	1 5	6	677	5 5	6	78	8 3
8	550	5 3	8	5 4	0 8	8	667	6 3	8	765	7 5
1932 0	00541	-3 8	1942 0	0 00503	-0 3	1952 0	0 0065	-8 0	1962 0	0 0075	-6 8
2	535	-0	2	503	0 5	2	635	8 5	2	738	5 0
4	533	+8	4	5 1	1 0	4	618	9 0	4	73	4 3
6	538	3 5	6	499	0 8	6	599	9 0	6	71	3 3
8	547	6 5	8	498	1 0	8	58	9 5	8	717	
1933 0	0 00564	+9 5	1943 0	0 0 495	-0 8	1953 0	0 00561	-10 5	1963 0	00715	1 0
2	585	11 0	2	495	0	2	540	10 3	2	713	-0 5
4	508	11 8	4	495	-0 5	4	520	10 0	4	713	+0 5
6	63	13	6	493	-0 3	6	500	9 8	6	715	1 3
8	660	14 5	8	494	+0 5	8	481	9 5	8	718	0
1934 0	0 00690	+16 0	1944 0	0 0 495	+1 0	1954 0	0 00462	-9 3	1964 0	0 007 3	+2
2	7 4	16 5	2	497	1 5	2	444	8 3	2	726	1 8
4	756	15 5	4	501	1 8	4	429	6 3	4	730	1 3
6	786	15 5	6	5 4	1 8	6	419	4 3	6	731	+0 5
8	818	15 3	8	5 8	2 3	8	41	2 8	8	732	0
1935 0	847	+14 5	1945 0	0 00513	+3 0	1955 0	0 00408	-0 3	1965 0	0 00731	-0 8
2	876	1 8	2	520	4 3	2	411	+2 3	2	7 9	1 5
4	898	9 8	4	530	4 3	4	417	4 0	4	725	2 5
6	915	8 3	6	537	4 3	6	427	5 5	6	719	4
8	931	6 3	8	547	5 8	8	439	7 8	8	709	5 8
1936 0	0 00940	+3 5	1946 0	0 00560	+6 5	1956 0	0 00458	+10 3	1966 0	0 00696	-7 5
2	945	+1 3	2	573	5 5	2	480	12 5	2	679	8 8
4	945	-1 0	4	58	4 8	4	508	14 0	4	661	9 3
6	941	3 3	6	59	5 3	6	536	14 5	6	642	10 0
8	93	5 8	8	603	5 5	8	566	17 0	8	621	10 0
1937 0	00918	-8 3	1947 0	0 00614	+5 8	1957 0	0 00604	+19 0	1967 0	0 00602	-9 8
2	899	1 3	2	6 6	5 8	2	64	18 5	2	58	9 0
4	877	11 5	4	637	5 0	4	678	17 3	4	566	7 3
6	853	11 8	6	646	5 0	6	711	17	6	553	5 8
8	830	12 8	8	657	5 3	8	746	17 0	8	543	4 0
1938 0	0 00802	-13 8	1948 0	0 00667	+5 3	1958 0	0 00779	+16 8	1968 0	00537	-2 5
2	775	14 0	2	678	4 8	2	813	15 3	2	532	-1 8
4	746	14 0	4	686	3 3	4	840	12 3	4	530	0 0
6	719	13 0	6	691	3 0	6	86	10 3	6	533	+2 5
8	694	1 8	8	698	3 3	8	881	8 3	8	540	4 5
1939 0	0 00668	-12 8	1949 0	0 00704	+2 3	1959 0	0 00895	+6 5	1969 0	0 00551	+5 5
2	643	11 8	2	7 7	0	2	9 7	4 3	2	562	7 0
4	6 1	1 3	4	712	0	4	912	2 3	4	579	9 8
6	602	8 8	6	715	+0 3	6	916	+1 0	6	601	10 5
8	586	8 5	8	713	0	8	916	-1 3	8	621	10 3
1940 0	0 00568	-8 3	1950 0	0 00715	+0 5	1960 0	0 00911	-4 3	1970 0	0 00642	+11 3

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXI *continued*

Equation of Longitude

Argument J

1	2	3	1	2	3	1	2	3
J	Equation	$\Delta$ 0 <sup>o</sup> .1	J	Equation	$\Delta$ 0 <sup>o</sup> .1	J	Equation	$\Delta$ 0 <sup>o</sup> .1
1970 <sup>o</sup>	0 <sup>o</sup> 00642	+ 11,3	1980 <sup>o</sup>	0 <sup>o</sup> 00382	+ 7,8	1990 <sup>o</sup>	0 <sup>o</sup> 00344	- 10,8
2	666	12,3	2	398	7,8	2	322	9,5
4	691	12,3	4	413	7,8	4	306	7,3
6	715	12,3	6	429	7,5	6	293	5,8
8	740	12,0	8	443	8,0	8	283	4,5
1971 <sup>o</sup>	0 <sup>o</sup> 00763	+ 10,8	1981 <sup>o</sup>	0 <sup>o</sup> 00461	+ 9,0	1991 <sup>o</sup>	0 <sup>o</sup> 00275	- 2,5
2	783	9,3	2	479	8,0	2	273	0,0
4	800	7,8	4	493	6,8	4	275	+ 2,3
6	814	6,0	6	506	6,5	6	282	4,5
8	824	4,8	8	519	5,8	8	293	7,5
1972 <sup>o</sup>	0 <sup>o</sup> 00833	+ 3,8	1982 <sup>o</sup>	0 <sup>o</sup> 00529	+ 4,8	1992 <sup>o</sup>	0 <sup>o</sup> 00312	+ 11,0
2	839	+ 2,0	2	538	3,5	2	337	13,3
4	841	0,0	4	543	2,3	4	365	14,5
6	839	- 2,8	6	547	2,0	6	395	15,5
8	830	4,5	8	551	1,8	8	427	16,8
1973 <sup>o</sup>	0 <sup>o</sup> 00821	- 5,3	1983 <sup>o</sup>	0 <sup>o</sup> 00554	+ 1,3	1993 <sup>o</sup>	0 <sup>o</sup> 00462	+ 19,0
2	809	7,5	2	556	- 0,5	2	503	20,3
4	791	9,3	4	552	2,3	4	543	19,5
6	772	10,0	6	547	2,5	6	581	19,0
8	751	11,0	8	542	3,0	8	619	19,3
1974 <sup>o</sup>	0 <sup>o</sup> 00728	- 12,3	1984 <sup>o</sup>	0 <sup>o</sup> 00535	- 3,5	1994 <sup>o</sup>	0 <sup>o</sup> 00658	+ 18,8
2	702	13,0	2	528	3,3	2	694	16,5
4	676	12,8	4	522	2,8	4	724	14,5
6	651	12,8	6	517	1,8	6	752	12,3
8	625	13,5	8	515	1,3	8	773	9,8
1975 <sup>o</sup>	0 <sup>o</sup> 00597	- 14,3	1985 <sup>o</sup>	0 <sup>o</sup> 00512	- 1,5	1995 <sup>o</sup>	0 <sup>o</sup> 00791	+ 8,5
2	568	13,8	2	509	- 1,0	2	807	6,0
4	542	12,8	4	508	0,0	4	815	3,0
6	517	12,3	6	509	+ 0,3	6	819	+ 0,5
8	493	12,5	8	509	0,8	8	817	- 2,0
1976 <sup>o</sup>	0 <sup>o</sup> 00467	- 12,0	1986 <sup>o</sup>	0 <sup>o</sup> 00512	+ 0,8	1996 <sup>o</sup>	0 <sup>o</sup> 00811	- 4,3
2	445	10,8	2	512	1,0	2	800	7,0
4	424	10,0	4	516	2,0	4	783	7,8
6	405	8,8	6	520	2,0	6	769	8,3
8	389	7,8	8	524	1,5	8	750	10,0
1977 <sup>o</sup>	0 <sup>o</sup> 00374	- 7,5	1987 <sup>o</sup>	0 <sup>o</sup> 00526	+ 1,3	1997 <sup>o</sup>	0 <sup>o</sup> 00729	- 10,5
2	359	6,3	2	529	+ 0,8	2	708	11,3
4	349	5,0	4	529	- 0,8	4	684	11,8
6	339	4,5	6	526	1,8	6	661	11,0
8	331	3,5	8	522	3,0	8	640	10,5
1978 <sup>o</sup>	0 <sup>o</sup> 00325	- 2,5	1988 <sup>o</sup>	0 <sup>o</sup> 00514	- 4,0	1998 <sup>o</sup>	0 <sup>o</sup> 00619	- 10,3
2	321	1,5	2	506	5,0	2	599	8,8
4	319	- 0,5	4	494	5,8	4	584	7,3
6	319	+ 0,8	6	483	7,0	6	570	6,8
8	322	2,5	8	466	9,0	8	557	5,3
1979 <sup>o</sup>	0 <sup>o</sup> 00329	+ 3,5	1989 <sup>o</sup>	0 <sup>o</sup> 00447	- 9,8	1999 <sup>o</sup>	0 <sup>o</sup> 00549	- 3,5
2	336	4,0	2	427	10,3	2	543	2,8
4	345	4,5	4	406	10,0	4	538	2,0
6	354	5,5	6	387	10,3	6	535	- 0,8
8	367	7,0	8	365	10,8	8	535	+ 0,3
1980 <sup>o</sup>	0 <sup>o</sup> 00382	+ 7,8	1990 <sup>o</sup>	0 <sup>o</sup> 00344	- 10,8	2000 <sup>o</sup>	0 <sup>o</sup> 00536	+ 0,5

Added Constant : 0<sup>o</sup>00600

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXII

Equation of Longitude

Argument K

K	Equation	3	4	K	Equation	3	4	K	Equation	3	4	K	Equation	3	4
K	Equation	$\Delta$ 0 001	$\frac{1}{2}\Delta$	K	Equation	$\Delta$ 0 001	$\frac{1}{2}\Delta$	K	Equation	$\Delta$ 0 001	$\frac{1}{2}\Delta$	K	Equation	$\Delta$ 0 001	$\frac{1}{2}\Delta$
0 000	0 7 00	- 9 8		<sup>d</sup> 0 250	0 0 888	+ 6 1	+ 10	<sup>d</sup> 0 500	8674	+ 7 4	- 04	<sup>d</sup> 0 750	0 1 431	- 17	- 08
005	6851	9 8	00	255	9 1	7 1	10	505	8810	26 9	06	755	10343	18 1	10
010	6702	29 8		260	2959	8 1	10	510	8943	6 4	04	760	10 50	19 0	08
015	6553	29 7	+ 2	265	30	9 1	10	515	9074	5 9	06	765	10153	19 7	6
020	64 5	9 5		270	3050	1	12	520	9 0	25 4	04	770	10 53	0 4	8
025	6 58	29 3	02	275	31 4	11	08	525	93 8	4 9	06	775	09949	1	8
0 030	0 0611	- 9 1	+ 2	0 280	0 0316	+ 1 1	+ 10	0 530	0 9451	+ 4	- 08	0 780	0 09841	- 0	- 8
035	5967	28 9	02	285	32 5	13 1	10	535	9570	3 5	6	785	9729	7	06
040	5823	8 6	4	290	3 93	14 0	8	540	9686	9	06	790	9614	3 3	06
045	5681	8 3	0	295	3365	14 9	10	545	9799	2 3	6	795	9496	4 0	08
050	5540	8 0	4	300	344	15 8	8	550	9909	21 6	08	800	9374	4 7	06
0 055	0 05401	- 7 6	+ 04	0 305	0 035 3	+ 16 7	+ 1	0 555	10015	+ 0 8	- 08	0 805	0 09 49	- 25	- 04
060	5 64	7	4	310	36 9	17 6	8	560	1 117	20 0	08	810	9122	25 7	06
065	51 9	6 7	6	315	3699	18 5	10	565	10 15	19	08	815	8992	26 3	06
070	4997	6 2	4	320	3794	19 3	06	570	1 309	18 3	10	820	8859	26 8	04
075	4867	5 7	06	325	389	20 0	8	575	10398	17 5	6	825	87 4	27	04
0 080	0 04740	- 25 1	+ 06	0 330	03994	+ 20 8	+ 08	0 580	1 484	+ 16 7	- 10	0 830	08587	- 27 6	- 4
085	4616	4 6	04	335	4100	21 6	08	585	1 565	15 8	08	835	8448	28 0	04
090	4494	4 0	08	340	4 10	2 3	06	590	1 642	14 9	1	840	8307	8 3	02
095	4376	23 3	06	345	4323	3 0	08	595	10714	13 9	10	845	8165	8 6	04
100	4261	6	08	350	444	23 7	06	600	10781	12 9	10	850	8021	8 9	0
0 105	0 04150	- 21 9	+ 06	0 355	0 04560	+ 4 3	+ 06	0 605	0 1 843	+ 12 0	- 8	0 855	0 07876	- 29	- 04
110	4 4	1	8	360	4683	4 8	04	610	10901	11 1	10	860	7729	9 5	- 0
115	3938	0 4	8	365	48 8	5 4	08	615	10954	10 1	1	865	7581	9 6	00
120	3838	19 6	8	370	4937	26	4	620	1100	9 1	10	870	7433	29 6	00
125	374	18 8	8	375	5068	26 5	6	625	11 45	8	12	875	7 85	9 7	- 0
0 130	0 365	- 18 0	+ 08	0 380	0 052	+ 27	+ 04	0 630	1108	+ 7 0	08	0 880	0 07136	- 9 8	00
135	356	17	08	385	5338	27 4	04	635	11115	6 0	12	885	6987	9 8	00
140	3478	16 3	10	390	5476	7 8	04	640	1114	4 9	10	890	6838	29 8	00
145	3399	15 3	1	395	5616	8	4	645	11164	3 9	10	895	6689	9 7	+ 02
150	33 5	14 4	08	400	5758	8 5	02	650	11181	8	12	900	6541	9 6	00
0 155	0 03 55	- 13 5	+ 10	0 405	0 05901	+ 8 7	+ 02	0 655	0 1119	+ 1 8	- 8	0 905	0 06393	- 29 5	+ 02
160	3190	12 5	10	410	6045	29 0	04	660	11199	+ 0 8	12	910	6 46	29 3	+ 02
165	3130	11 6	8	415	6191	9 3	02	665	11 00	- 0 4	12	915	6100	29	00
170	3074	10 6	1	420	6338	29 5	+ 0	670	11195	14	08	920	5954	29 0	+ 04
175	3 24	9 6	8	425	6486	9 6	00	675	11186	4	1	925	581	28 6	04
0 180	0 02978	- 8 6	+ 12	0 430	0 06634	+ 9 7	+ 02	0 680	11171	- 3 5	- 10	0 930	0 05668	- 8 3	+ 02
185	2938	7 6	08	435	6783	9 8	00	685	11151	4 6	12	935	5527	7 9	6
190	290	6 6	12	440	6932	29 8	0	690	11125	5 6	08	940	5389	27 5	0
195	287	5 5	10	445	7081	29 8	0	695	11 95	6 6	1	945	5 5	7 2	04
200	2847	4 4	12	450	7 3	29 8	00	700	11059	7 7	10	950	5117	6 7	06
0 205	0 0 828	- 3 4	+ 08	0 455	0 07379	+ 29 7	- 02	0 705	0 11018	- 8 7	- 10	0 955	0 04985	- 26 1	+ 6
210	2813	4	12	460	7527	29 6	0	710	1097	9 7	10	960	4856	25 6	04
215	804	1 3	10	465	7675	29 4	- 04	715	10921	10 7	10	965	4729	5 1	06
220	2800	- 0	1	470	78 1	29 2	0	720	10865	11 6	08	970	4605	24 5	06
225	2802	+ 0 8	08	475	7967	29 1	- 02	725	10805	12 6	12	975	4484	23 9	6
0 230	0 02808	+ 1 8	+ 1	0 480	0 0811	+ 8 8	- 04	0 730	0 10739	- 13 6	- 08	0 980	0 04366	- 3 2	+ 08
235	28 0	3 0	1	485	8 55	8 4	04	735	10669	14 5	1	985	4252	5	06
240	2838	4 0	08	490	8396	28 1	02	740	10594	15 4	08	990	4141	19	06
245	2860	5 0	12	495	8536	27 8	04	745	10515	16 3	10	995	4033	21 1	10
0 250	0 02888	+ 6 1	+ 10	0 500	0 08674	+ 27 4	- 04	0 750	0 10431	- 17 2	- 08	1 000	0 03930	- 20 3	+ 08

Applied to +



# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXII continued

Equation of Longitude

Argument K

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
K	Equa- tion	$\Delta$ 0 <sup>d</sup> 001	$\frac{1}{2}\Delta^2$	K	Equa- tion	$\Delta$ 0 <sup>d</sup> 001	$\frac{1}{2}\Delta^2$	K	Equa- tion	$\Delta$ 0 <sup>d</sup> 001	$\frac{1}{2}\Delta^2$	K	Equa- tion	$\Delta$ 0 <sup>d</sup> 001	$\frac{1}{2}\Delta^2$
d 1'000	0°03930	-20,3	+08	d 1'250	0°04819	+25,4	+08	d 1'500	0°10958	+10,1	-10	d 1'750	0°07568	-29,6	,00
005	3830	19,6	,08	255	4948	26,0	,04	505	11006	9,1	,10	755	7420	29,6	,00
010	3734	18,8	,08	260	5080	26,5	,05	510	11048	8,0	,12	760	7272	29,7	-,02
015	3643	18,0	,08	265	5214	27,0	,04	515	11085	7,0	,08	765	7123	29,8	,00
020	3555	17,2	,08	270	5350	27,4	,04	520	11117	6,0	,12	770	6974	29,8	,00
025	3471	16,3	,10	275	5488	27,8	,04	525	11144	4,9	,10	775	6825	29,8	,00
1'030	0°03393	-15,3	+10	1'280	0°05628	+28,2	+04	1'530	0°11166	+3,9	-10	1'780	0°06676	-29,7	+02
035	3319	14,4	,08	285	5770	28,5	,02	535	11182	2,8	,12	785	6528	29,6	,00
040	3249	13,5	,10	290	5913	28,7	,02	540	11193	1,8	,08	790	6380	29,5	+02
045	3185	12,5	,10	295	6058	29,0	,04	545	11199	+0,8	,12	795	6233	29,3	+02
050	3125	11,6	,08	300	6204	29,3	,02	550	11200	-0,4	,12	800	6087	29,2	,00
1'055	0°03070	-10,6	+12	1'305	0°06351	+29,5	+02	1'555	0°11194	-1,4	-,08	1'805	0°05942	-29,0	+04
060	3020	9,6	,08	310	6499	29,6	,02	560	11184	2,4	,12	810	5798	28,6	,04
065	2974	8,6	,12	315	6647	29,7	,02	565	11169	3,5	,10	815	5656	28,3	,02
070	2935	7,6	,08	320	6796	29,8	+02	570	11149	4,6	,12	820	5515	27,9	,06
075	2899	6,6	,12	325	6945	29,8	,00	575	11122	5,6	,08	825	5377	27,5	,02
1'080	0°02870	-5,5	+10	1'330	0°07094	+29,8	,00	1'580	0°11092	-6,6	-,12	1'830	0°05240	-27,2	+04
085	2845	4,4	,12	335	7243	29,8	,00	585	11056	7,7	,10	835	5104	26,7	,06
090	2827	3,4	,08	340	7392	29,7	-,02	590	11014	8,7	,10	840	4974	26,1	06
095	2812	2,4	,12	345	7540	29,6	,00	595	10968	9,7	,10	845	4845	25,6	,04
1'00	2804	1,3	,10	350	7688	29,4	-,04	600	10916	10,7	,10	850	4718	25,1	,06
1'105	0°02800	-0,2	+12	1'355	0°07834	+29,2	,00	1'605	0°10860	-11,6	-,08	1'855	0°04595	-24,5	+06
110	2802	+0,8	,08	360	7979	29,1	-,02	610	10799	12,6	,12	860	4474	23,9	,06
115	2809	1,8	,12	365	8124	28,8	,04	615	10733	13,6	,08	865	4356	23,2	,08
120	2822	3,0	,12	370	8267	28,4	,04	620	10663	14,5	,10	870	4242	22,5	,06
125	2840	4,0	,08	375	8408	28,1	,02	625	10588	15,4	,08	875	4132	21,9	,06
1'130	0°02862	+5,0	+12	1'380	0°08548	+27,8	-,04	1'630	0°10508	-16,3	-,10	1'880	0°04024	-21,1	+10
135	2891	6,1	,10	385	8686	27,4	,04	635	10423	17,2	,08	885	3921	20,3	,08
140	2924	7,1	,10	390	8821	26,9	,06	640	10335	18,1	,10	890	3821	19,5	,08
145	2963	8,1	,10	395	8954	26,4	,04	645	10242	19,0	,08	895	3726	18,7	,08
150	3006	9,1	,10	400	9085	25,9	,06	650	10144	19,7	,06	900	3635	17,9	,08
1'155	0°03055	+10,2	+12	1'405	0°09213	+25,4	-,04	1'655	0°10044	-20,4	-,08	1'905	0°03547	-17,1	+08
160	3109	11,2	,08	410	9339	24,9	,06	660	9940	21,2	,08	910	3464	16,2	,10
165	3167	12,1	,10	415	9461	24,2	,08	665	9831	22,0	,08	915	3386	15,2	,10
170	3231	13,1	,10	420	9580	23,5	,06	670	9719	22,7	,06	920	3313	14,3	,08
175	3299	14,0	,08	425	9696	22,9	,06	675	9604	23,3	,06	925	3243	13,4	,10
1'180	0°03372	+14,9	+10	1'430	0°09808	+22,3	-,06	1'680	0°09486	-24,0	-,08	1'930	0°03179	-12,4	+10
185	3449	15,8	,08	435	109918	21,6	,08	685	9363	24,7	,06	935	3120	11,5	,08
190	3530	16,7	,10	440	10024	20,8	,08	690	9238	25,2	,04	940	3065	10,5	,12
195	3617	17,6	,08	445	10125	20,0	,08	695	9111	25,7	,06	945	3016	9,5	,08
200	3707	18,5	,10	450	10223	19,2	,08	700	8981	26,3	,06	950	2971	8,5	,12
1'205	0°03802	+19,3	+06	1'455	0°10317	+18,3	-,10	1'705	0°08847	-26,8	-,04	1'955	0°02932	-7,5	+08
210	3901	20,0	,08	460	10405	17,5	,06	710	8712	27,2	,04	960	2896	6,5	,12
215	4003	20,8	,08	465	10491	16,7	,10	715	8575	27,6	,04	965	2867	5,4	,10
220	4109	21,6	,08	470	10572	15,8	,08	720	8436	28,0	,04	970	2843	4,3	,12
225	4220	22,3	,06	475	10648	14,9	,10	725	8295	28,3	,02	975	2825	3,3	,08
1'230	0°04333	+23,0	+08	1'480	0°10720	+13,9	-,10	1'730	0°08153	-28,6	-,04	1'980	0°02811	-2,3	+12
235	4450	23,7	,06	485	10786	12,9	,10	735	8009	28,9	,02	985	2803	1,2	,10
240	4571	24,3	,06	490	10848	12,0	,08	740	7863	29,2	,04	990	2800	-0,1	,12
245	4694	24,8	,04	495	10906	11,1	,10	745	7716	29,5	-,02	995	2803	+0,9	,08
1'250	0°04819	+25,4	+08	1'500	0°10958	+10,1	-,10	1'750	0°07568	-29,6	,00	2'000	0°02810	+1,9	+12

Applied Constant: +0°07000.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXIII      Equations of Longitude      XXIV

P	Equatio
d	
0 00	00150
02	140
04	129
06	119
08	110
10	10
0 12	00094
14	88
16	83
18	79
20	77
0 22	0 00076
24	77
26	79
28	82
30	87
0 32	0 00094
34	101
36	109
38	118
40	1 8
0 42	0 00138
44	149
46	159
48	170
50	180
0 52	0 0189
54	197
56	05
58	211
60	17
0 62	0 00221
64	2 3
66	2 4
68	223
70	221
0 72	0 00 18
74	13
76	207
78	200
80	192
0 82	0 00183
84	173
86	163
88	152
90	142
0 92	0 00131
94	121
96	112
98	103
1 00	0 00096

Add d C t t 00 5

Q	Equation
d	
0 00	0 00050
02	46
04	4
06	38
08	35
10	32
0 12	0 0 029
14	27
16	5
18	3
20	
0 22	0 00022
24	22
26	3
28	24
30	26
0 32	0 00029
34	31
36	35
38	38
40	42
0 42	0 0 46
44	50
46	54
48	57
50	61
0 52	0 00065
54	68
56	71
58	73
60	75
0 62	0 00077
64	78
66	78
68	78
70	77
0 72	0 00076
74	74
76	72
78	69
80	66
0 82	0 00062
84	59
86	55
88	51
90	47
0 92	0 00043
94	39
96	36
98	32
1 00	0 00030

Add d C t t 0005

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXV

Equation of Variation of Radius Vector, Doubled

Argument A

1	2	3	1	2	3	1	2	3	1	2	3
A	Equation	$\Delta_{0d'0r}$	A	Equation	$\Delta_{0d'0r}$	A	Equation	$\Delta_{0d'0r}$	A	Equation	$\Delta_{0d'0r}$
d			d			d			d		
0'00	- '00868	0	1'00	+ '00707	- 12	2'00	- '00589	+ 22	3'00	+ '00214	- 28
'02	866	+ 2	'02	681	14	'02	544	23	'02	158	29
'04	860	4	'04	652	16	'04	496	25	'04	100	29
'06	849	6	'06	618	18	'06	446	26	'06	+ 42	29
'08	834	9	'08	582	19	'08	393	27	'08	- 17	30
'10	815	11	'10	542	21	'10	339	27	'10	76	30
0'12	- '00792	+ 13	1'12	+ '00499	- 22	2'12	- '00284	+ 28	3'12	- '00135	- 30
'14	765	15	'14	454	23	'14	228	29	'14	194	29
'16	734	16	'16	406	25	'16	170	29	'16	252	29
'18	700	18	'18	356	26	'18	112	29	'18	308	28
'20	662	20	'20	304	27	'20	- 53	30	'20	363	27
0'22	- '00621	+ 21	1'22	+ '00250	- 28	2'22	+ '00006	+ 29	3'22	+ '00417	- 27
'24	578	23	'24	195	28	'24	64	29	'24	469	25
'26	531	24	'26	138	29	'26	122	29	'26	518	24
'28	483	25	'28	80	29	'28	178	28	'28	566	23
'30	432	27	'30	+ 22	29	'30	234	28	'30	611	21
0'32	- '00379	+ 27	1'32	- '00036	- 29	2'32	+ '00289	+ 27	3'32	- '00651	- 20
'34	324	28	'34	95	30	'34	342	26	'34	689	19
'36	268	29	'36	154	29	'36	393	25	'36	725	17
'38	210	29	'38	212	29	'38	441	24	'38	757	15
'40	151	29	'40	270	29	'40	487	22	'40	785	13
0'42	- '00093	+ 29	1'42	- '00326	- 28	2'42	+ '00530	+ 21	3'42	- '00808	- 11
'44	- 34	30	'44	380	27	'44	571	20	'44	829	9
'46	+ 26	30	'46	432	26	'46	609	18	'46	845	7
'48	84	29	'48	483	25	'48	643	16	'48	857	5
'50	142	29	'50	531	24	'50	674	15	'50	865	3
0'52	+ '00198	+ 28	1'52	- '00577	- 22	2'52	+ '00701	+ 13	3'52	- '00868	- 1
'54	254	28	'54	620	21	'54	724	11	'54	867	+ 2
'56	308	27	'56	661	20	'56	744	9	'56	861	4
'58	360	26	'58	698	18	'58	760	7	'58	851	6
'60	411	25	'60	732	16	'60	771	5	'60	838	8
0'62	+ '00459	+ 23	1'62	- '00763	- 15	2'62	+ '00779	+ 3	3'62	- '00821	+ 10
'64	504	22	'64	790	13	'64	782	+ 1	'64	799	12
'66	546	21	'66	813	11	'66	782	- 1	'66	773	14
'68	586	19	'68	833	9	'68	777	4	'68	743	16
'70	623	17	'70	847	6	'70	768	6	'70	710	18
0'72	+ '00655	+ 15	1'72	- '00858	- 5	2'72	+ '00754	- 8	3'72	- '00673	+ 19
'74	684	14	'74	865	- 3	'74	737	10	'74	634	21
'76	710	12	'76	868	0	'76	716	11	'76	591	22
'78	732	10	'78	866	+ 2	'78	692	13	'78	545	24
'80	750	8	'80	861	4	'80	664	15	'80	496	25
0'82	+ '00764	+ 6	1'82	- '00851	+ 6	2'82	+ '00631	- 17	3'82	- '00446	+ 26
'84	775	4	'84	837	8	'84	596	19	'84	393	27
'86	781	+ 2	'86	819	10	'86	557	20	'86	339	28
'88	783	0	'88	797	12	'88	515	22	'88	282	29
'90	780	- 2	'90	771	14	'90	471	23	'90	225	29
0'92	+ '00774	- 4	1'92	- '00742	+ 16	2'92	+ '00423	- 24	3'92	- '00167	+ 29
'94	763	6	'94	708	18	'94	374	25	'94	108	30
'96	749	8	'96	671	19	'96	322	26	'96	- 49	30
'98	730	11	'98	632	21	'98	269	27	'98	+ 10	29
1'00	+ '00707	- 12	2'00	- '00589	+ 22	3'00	+ '00214	- 28	4'00	+ '00068	29

Applied Constant: - '00040.

The Equation of this Table must be supplemented by those of Tables XXVI-XXIX.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Variation of Radius Vector, Doubled

**XXVI**

<b>B</b>	Equation
<sup>d</sup> <b>00</b>	+ 00009
<b>1</b>	9
<b>2</b>	11
<b>3</b>	11
<b>4</b>	13
<b>5</b>	13
<b>06</b>	+ 00013
<b>7</b>	11
<b>8</b>	10
<b>9</b>	9
<b>10</b>	6
<b>11</b>	+ 00005
<b>2</b>	5
<b>3</b>	6
<b>4</b>	7
<b>5</b>	1
<b>16</b>	+ 00 11
<b>7</b>	13
<b>8</b>	13
<b>9</b>	13
<b>20</b>	12
<b>21</b>	+ 00011
<b>2</b>	10
<b>3</b>	9
<b>4</b>	9
<b>25</b>	+ 0001

Add 10 t t + ∞

**XXVII**

<b>C</b>	Equation
<b>00</b>	+ 00001
<b>1</b>	
<b>2</b>	3
<b>3</b>	6
<b>4</b>	9
<b>5</b>	1
<b>06</b>	+ 00015
<b>7</b>	17
<b>8</b>	19
<b>9</b>	19
<b>10</b>	18
<b>11</b>	+ 00016
<b>2</b>	14
<b>3</b>	11
<b>4</b>	8
<b>5</b>	5
<b>16</b>	+ 00003
<b>7</b>	1
<b>8</b>	1
<b>9</b>	
<b>20</b>	+ 00004

Add dC t t + ∞

**XXVIII**

<b>D</b>	Equation
<sup>d</sup> <b>00</b>	+ 00003
<b>1</b>	3
<b>2</b>	5
<b>3</b>	7
<b>4</b>	9
<b>5</b>	11
<b>06</b>	+ 00014
<b>7</b>	16
<b>8</b>	17
<b>9</b>	17
<b>10</b>	16
<b>11</b>	+ 0015
<b>2</b>	13
<b>3</b>	11
<b>4</b>	8
<b>5</b>	6
<b>16</b>	+ 00004
<b>7</b>	3
<b>8</b>	3
<b>9</b>	4
<b>20</b>	+ 00005

Add 10 t t + ∞

**XXIX**

<b>E</b>	Equation
<sup>d</sup> <b>00</b>	+ 00007
<b>1</b>	7
<b>2</b>	8
<b>3</b>	9
<b>4</b>	10
<b>5</b>	11
<b>06</b>	+ 00012
<b>7</b>	12
<b>8</b>	13
<b>9</b>	13
<b>10</b>	13
<b>11</b>	+ 00012
<b>2</b>	11
<b>3</b>	10
<b>4</b>	9
<b>5</b>	8
<b>16</b>	+ 00008
<b>7</b>	7
<b>8</b>	7
<b>9</b>	7
<b>20</b>	+ 00008

Add 10 t t + ∞

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXX				Equation of Latitude				Argument K			
1	2	3	4	1	2	3	4	1	2	3	4
K	Equation	$\Delta$ 0 <sup>d</sup> .001	$\frac{1}{2}\Delta^2$	K	Equation	$\Delta$ 0 <sup>d</sup> .001	$\frac{1}{2}\Delta^2$	K	Equation	$\Delta$ 0 <sup>d</sup> .001	$\frac{1}{2}\Delta^2$
d				d				d			
0.000	.35000	+120,3	,00	0.250	.61305	+76,2	-,16	0.500	.68217	-24,5	-,22
.005	.35601	120,3	,00	.255	.61682	74,6	,16	.505	.68089	26,7	,20
.010	.36203	120,3	,00	.260	.62051	72,8	,18	.510	.67950	28,8	,22
.015	.36804	120,1	-,02	.265	.62410	71,0	,18	.515	.67801	30,9	,20
.020	.37404	119,9	,02	.270	.62761	69,3	,16	.520	.67641	32,9	,20
.025	.38003	119,8	,02	.275	.63103	67,6	,18	.525	.67472	34,9	,20
0.030	.38602	+119,6	-,02	0.280	.63437	+65,8	-,18	0.530	.67292	-37,0	-,22
.035	.39199	119,4	,02	.285	.63761	64,0	,18	.535	.67102	39,1	,20
.040	.39796	119,1	,04	.290	.64077	62,2	,20	.540	.66901	41,1	,20
.045	.40390	118,8	,02	.295	.64383	60,3	,18	.545	.66691	43,1	,20
.050	.40984	118,5	,04	.300	.64680	58,5	,18	.550	.66470	45,1	,20
0.055	.41575	+118,1	-,04	0.305	.64968	+56,5	-,20	0.555	.66240	-47,1	-,20
.060	.42165	117,7	,04	.310	.65245	54,6	,18	.560	.65999	49,0	,18
.065	.42752	117,2	,06	.315	.65514	52,7	,20	.565	.65750	50,9	,20
.070	.43337	116,6	,06	.320	.65772	50,7	,20	.570	.65490	53,0	,20
.075	.43918	116,1	,04	.325	.66021	48,8	,18	.575	.65220	54,9	,18
0.080	.44498	+115,6	-,06	0.330	.66260	+46,9	-,20	0.580	.64941	-56,7	-,20
.085	.45074	114,9	,08	.335	.66490	45,0	,20	.585	.64653	58,6	,18
.090	.45647	114,3	,06	.340	.66710	43,0	,20	.590	.64355	60,5	,18
.095	.46217	113,7	,06	.345	.66920	40,9	,20	.595	.64048	62,3	,18
.100	.46784	112,9	,08	.350	.67119	38,9	,20	.600	.63733	64,1	,20
0.105	.47346	+112,1	-,08	0.355	.67309	+36,9	-,20	0.605	.63407	-66,0	-,16
.110	.47905	111,3	,08	.360	.67488	34,8	,22	.610	.63073	67,7	,18
.115	.48459	110,5	,08	.365	.67657	32,7	,20	.615	.62730	69,4	,18
.120	.49010	109,7	,10	.370	.67815	30,6	,20	.620	.62379	71,2	,18
.125	.49556	108,8	,08	.375	.67963	28,5	,22	.625	.62018	72,9	,16
0.130	.50098	+107,9	-,10	0.380	.68100	+26,5	-,20	0.630	.61650	-74,6	-,18
.135	.50635	106,9	,10	.385	.68228	24,4	,22	.635	.61272	76,3	,16
.140	.51167	105,9	,10	.390	.68344	22,3	,20	.640	.60887	77,9	,16
.145	.51694	104,9	,10	.395	.68451	20,2	,22	.645	.60493	79,5	,16
.150	.52216	103,8	,12	.400	.68546	18,0	,20	.650	.60092	81,1	,16
0.155	.52732	+102,6	-,12	0.405	.68631	+15,9	-,22	0.655	.59682	-82,7	-,16
.160	.53242	101,5	,10	.410	.68705	13,8	,20	.660	.59265	84,2	,14
.165	.53747	100,2	,12	.415	.68769	11,8	,22	.665	.58840	85,7	,16
.170	.54244	99,0	,12	.420	.68823	9,6	,22	.670	.58408	87,2	,14
.175	.54737	97,9	,12	.425	.68865	7,4	,20	.675	.57968	88,7	,16
0.180	.55225	+96,8	-,14	0.430	.68897	+5,3	-,22	0.680	.57521	-90,1	-,14
.185	.55705	95,4	,12	.435	.68918	3,1	,22	.685	.57067	91,5	,14
.190	.56179	94,1	,14	.440	.68928	+1,0	,20	.690	.56606	93,0	,14
.195	.56646	92,8	,14	.445	.68928	-1,1	,22	.695	.56137	94,3	,12
.200	.57107	91,4	,14	.450	.68917	3,3	,22	.700	.55663	95,6	,14
0.205	.57560	+89,9	-,14	0.455	.68895	-5,5	-,22	0.705	.55181	-96,9	-,12
.210	.58006	88,5	,14	.460	.68862	7,6	,20	.710	.54694	98,0	,12
.215	.58445	87,3	,16	.465	.68819	9,7	,22	.715	.54201	99,2	,12
.220	.58877	85,6	,14	.470	.68765	11,9	,22	.720	.53702	100,4	,12
.225	.59301	83,9	,16	.475	.68700	14,0	,20	.725	.53197	101,6	,12
0.230	.59718	+82,6	-,16	0.480	.68625	-16,2	-,22	0.730	.52686	-102,8	-,12
.235	.60127	81,0	,16	.485	.68538	18,4	,20	.735	.52169	103,9	,10
.240	.60528	79,3	,16	.490	.68441	20,4	,22	.740	.51647	104,9	,10
.245	.60920	77,7	,16	.495	.68334	22,4	,20	.745	.51120	105,9	,10
0.250	.61305	+76,2	-,16	0.500	.68217	-24,5	-,22	0.750	.50588	-106,9	-,10
.755	.50051	107,9	,10	.755	.50051	107,9	,10	.755	.50051	107,9	,10
.760	.49509	108,9	,10	.760	.49509	108,9	,10	.760	.49509	108,9	,10
.765	.48962	109,7	,08	.765	.48962	109,7	,08	.765	.48962	109,7	,08
.770	.48412	110,5	,08	.770	.48412	110,5	,08	.770	.48412	110,5	,08
.775	.47857	111,4	,08	.775	.47857	111,4	,08	.775	.47857	111,4	,08
.780	.47298	-112,2	-,08	.780	.47298	-112,2	-,08	.780	.47298	-112,2	-,08
.785	.46735	112,9	,08	.785	.46735	112,9	,08	.785	.46735	112,9	,08
.790	.46169	113,6	,06	.790	.46169	113,6	,06	.790	.46169	113,6	,06
.795	.45599	114,3	,08	.795	.45599	114,3	,08	.795	.45599	114,3	,08
.800	.45026	115,0	,06	.800	.45026	115,0	,06	.800	.45026	115,0	,06
.805	.44449	-115,7	-,06	.805	.44449	-115,7	-,06	.805	.44449	-115,7	-,06
.810	.43869	116,3	,06	.810	.43869	116,3	,06	.810	.43869	116,3	,06
.815	.43286	116,7	,04	.815	.43286	116,7	,04	.815	.43286	116,7	,04
.820	.42702	117,1	,06	.820	.42702	117,1	,06	.820	.42702	117,1	,06
.825	.42115	117,6	,04	.825	.42115	117,6	,04	.825	.42115	117,6	,04
.830	.41526	-118,1	-,04	.830	.41526	-118,1	-,04	.830	.41526	-118,1	-,04
.835	.40934	118,5	,04	.835	.40934	118,5	,04	.835	.40934	118,5	,04
.840	.40341	118,9	,04	.840	.40341	118,9	,04	.840	.40341	118,9	,04
.845	.39745	119,1	,02	.845	.39745	119,1	,02	.845	.39745	119,1	,02
.850	.39150	119,3	,02	.850	.39150	119,3	,02	.850	.39150	119,3	,02
.855	.38552	-119,7	-,04	.855	.38552	-119,7	-,04	.855	.38552	-119,7	-,04
.860	.37953	119,9	,00	.860	.37953	119,9	,00	.860	.37953	119,9	,00
.865	.37353	120,0	-,02	.865	.37353	120,0	-,02	.865	.37353	120,0	-,02
.870	.36753	120,2	-,02	.870	.36753	120,2	-,02	.870	.36753	120,2	-,02
.875	.36151	120,3	,00	.875	.36151	120,3	,00	.875	.36151	120,3	,00
.880	.35550	-120,2	,00	.880	.35550	-120,2	,00	.880	.35550	-120,2	,00
.885	.34949	120,2	,00	.885	.34949	120,2	,00	.885	.34949	120,2	,00
.890	.34348	120,2	,00	.890	.34348	120,2	,00	.890	.34348	120,2	,00
.895	.33747	120,3	,00	.895	.33747	120,3	,00	.895	.33747	120,3	,00
.900	.33145	120,2	+,02	.900	.33145	120,2	+,02	.900	.33145	120,2	+,02
.905	.32545	-120,0	+,02	.905	.32545	-120,0	+,02	.905	.32545	-120,0	+,02
.910	.31945	119,8	,02	.910	.31945	119,8	,02	.910	.31945	119,8	,02
.915	.31347	119,6	,02	.915	.31347	119,6	,02	.915	.31347	119,6	,02
.920	.30749	119,4	,02	.920	.30749	119,4	,02	.920	.30749	119,4	,02
.925	.30153	119,0	,04	.925	.30153	119,0	,04	.925	.30153	119,0	,04
.930	.29559	-118,8	+,02	.930	.29559	-118,8	+,02	.930	.29559	-118,8	+,02
.935	.28965	118,6	,04	.935	.28965	118,6	,04	.935	.28965	118,6	,04
.940	.28373	118,1	,04	.940	.28373	118,1	,04	.940	.28373	118,1	,04
.945	.27784	117,6	,06	.945	.27784	117,6	,06	.945	.27784	117,6	,06
.950	.27197	117,1	,04	.950	.27197	117,1	,04	.950	.27197	117,1	,04
.955	.26613	-116,6	+,06	.955	.26613	-116,6	+,06	.955	.26613	-116,6	+,06
.960	.26031	116,1	,06	.960	.26031	116,1	,06	.960	.26031	116,1	,06
.965	.25452	115,5	,06	.965	.25452	115,5	,06	.965	.25452	115,5	,06
.970	.24876	114,8	,06	.970	.24876	114,8	,06	.970	.24876	114,8	,06
.975	.24384	114,2	,06	.975	.24384	114,2	,06	.975	.24384	114,2	,06
.980	.23734	-113,5	+,08	.980	.23734	-113,5	+,08	.980	.23734	-113,5	+,08
.985	.23169	112,7	,08	.985	.23169	112,7	,08	.985	.23169	112,7	,08
.990	.22607	112,1	,06	.990	.22607	112,1	,06	.990	.22607	112,1	,06
.995	.22048	111,3	,10	.995	.22048	111,3	,10	.995	.22048	111,3	,10
1.000	.21494	-110,3	+,08	1.000	.21494	-110,3	+,08	1.000	.21494	-110,3	+,08

Added Constant: 0.35000.

For Ellipses, and as the argument of Table XXXVII, the Equation of this Table must be supplemented by those of Tables XXXI-XXXIV. For the other phenomena it must be also modified by Tables XXXV, XXXVI.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

XXX continued

Equation of Latitude

Argument K

K	Equation	$\Delta$	$\frac{1}{2}\Delta$	K	Equation	$\Delta$	$\frac{1}{2}\Delta$	K	Equation	$\Delta$	$\frac{1}{2}\Delta$	K	Equation	$\Delta$	$\frac{1}{2}\Delta$
1 000	1494	-1103	+08	1 250	033	-36	+2	1 500	07298	+696	+18	1 750	3699	+120	00
005	0945	195	8	255	172	305	0	505	07651	713	16	755	3399	11	+02
010	20399	187	1	260	05	285		510	811	730	18	760	3390	103	00
015	19858	1079	10	265	01887	64		515	08381	748	16	765	34502	11	0
020	1931	1069	10	270	01761	241	0	520	8759	765	18	770	35103	10	00
025	8,89	157	1	275	01646	19	2	525	9146	783	16	775	35704	103	00
1 030	1863	-1047	+10	1 280	154	-200	+20	1 530	9541	+796	+16	1 780	36306	+124	0
035	1774	137	10	285	1446	180	2	535	0994	813	16	785	36908	1202	-02
040	17226	106	1	290	0136	158		540	10354	83	14	790	3758	1199	0
045	16716	1014	1	295	188	137	0	545	1077	843	16	795	38107	1198	02
050	1621	100	1	300	015	115		550	11197	858	16	800	38706	1196	
1 055	15714	990	+1	1 305	01173	-93	+	1 555	11630	+873	+14	1 805	39303	+1194	-0
060	15	978	1	310	0113	72	20	560	11070	888	14	810	39900	1191	04
065	14736	967	1	315	111	51		565	12518	902	14	815	40494	1187	04
070	1455	954	14	320	1081	9	2	570	197	916	14	820	41087	1183	04
075	13782	940	14	325	0107	-8	0	575	13434	930	14	825	41677	1179	04
1 080	13315	96	+14	1 330	1073	+13	+	1 580	13902	+943	+14	1 830	466	+1175	-04
085	1856	91	12	335	0185	35	2	585	14377	956	12	835	485	1171	04
090	143	898	16	340	01108	56	20	590	14858	970	14	840	43437	1166	06
095	11958	884	14	345	1141	77		595	15347	983	12	845	44018	1160	06
100	1519	871	14	350	01185	99	2	600	15841	994	12	850	44597	1154	06
1 105	11087	-856	+16	1 355	014	+12	+20	1 605	16341	+1006	+12	1 855	45172	+1148	-06
110	10663	84	14	360	1307	143	2	610	16847	1018	1	860	45745	1142	08
115	10247	85	16	365	1383	163		615	17359	109	10	865	46314	1136	06
120	09838	89	16	370	1470	184		620	17876	1039	10	870	46881	1129	08
125	9438	793	16	375	567	06	2	625	18398	15	1	875	47443	112	8
1 130	945	-777	+16	1 380	1676	+227	+20	1 630	1896	+1061	+1	1 880	4801	+1111	-08
135	8661	760	18	385	1794	48		635	19459	1071	1	885	48554	1103	08
140	0885	74	18	390	0194	69	20	640	19997	1080	08	890	49104	1095	10
145	07919	725	16	395	263	89	2	645	0539	1089	10	895	49649	186	08
150	07560	709	16	400	213	310	0	650	21086	1098	08	900	5190	177	1
1 155	71	-692	+18	1 405	373	+331	+0	1 655	1637	+1106	+10	1 905	50726	+167	1
160	06868	675	18	410	544	35	20	660	2192	1115	08	910	5157	1057	10
165	6535	657	18	415	075	373	2	665	75	112	06	915	51783	1047	10
170	611	638	18	420	0917	393		670	23314	1129	08	920	5304	1036	12
175	05897	60	18	425	3118	413	20	675	3881	1136	08	925	52819	1024	12
1 180	0559	-60	+0	1 430	0333	+433	+2	1 680	445	+1143	+06	1 930	5338	+1013	-10
185	595	581	18	435	3551	453	20	685	526	1150	06	935	5383	100	12
190	501	563	18	440	03783	471	18	690	5602	1156	06	940	54330	990	1
195	0475	546	0	445	402	489	20	695	618	1161	06	945	5482	978	14
200	04464	526	0	450	047	51		700	26763	1166	04	950	5538	964	12
1 205	406	-506	+18	1 455	04532	+531	+0	1 705	27348	+1172	+6	1 955	55786	+951	-14
210	3958	487	2	460	483	550	18	710	7935	1177	04	960	5659	939	12
215	03719	467		465	058	568	18	715	2855	1181	04	965	5675	926	14
220	03491	447	20	470	05371	588		720	29116	1185	04	970	57185	91	14
225	037	47	0	475	05670	67	18	725	29710	1189	04	975	57637	898	14
1 230	03064	-47	+20	1 480	05978	+65	+18	1 730	30305	+1191	+0	1 980	58083	+883	-16
235	02865	387	20	485	0695	642	18	735	30902	1194	02	985	585	868	14
240	677	367	2	490	06620	660	18	740	31499	1197	04	990	58951	853	16
245	0498	347	20	495	6955	678	18	745	3099	1200	+02	995	59373	837	14
1 250	02330	-326	+2	1 500	0798	+696	+18	1 750	32699	+10	00	2 000	59788	+82	-16

Add d C t t 5000 F Elp d th g t f T bl XXXVII th Eq ti f thi T bl t) ppl t d by th  
f l bl XXXI XXXIV F tl th pl m itm t b l m dif d by T l l XXXV XXXVI

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Latitude

XXXI

1	2	3	1	2	3
L	Equation	$\Delta$ 0d'0r	L	Equation	$\Delta$ 0d'0r
d			d		
0'00	0'00300	+ 11	1'00	0'00180	- 10
02	321	11	02	161	9
04	342	10	04	143	9
06	363	11	06	126	9
08	384	10	08	109	8
10	404	10	10	93	8
0'12	0'00423	+ 9	1'12	0'00078	- 7
14	442	9	14	65	7
16	460	9	16	52	6
18	478	9	18	41	5
20	494	8	20	32	5
0'22	0'00510	+ 8	1'22	0'00023	- 4
24	524	7	24	16	3
26	538	7	26	10	3
28	550	6	28	6	2
30	561	5	30	3	- 1
0'32	0'00570	+ 4	1'32	0'00002	0
34	578	4	34	2	+ 1
36	585	3	36	4	1
38	591	3	38	7	2
40	595	2	40	12	3
0'42	0'00597	+ 1	1'42	0'00019	+ 4
44	598	0	44	26	4
46	597	- 1	46	35	5
48	595	1	48	46	6
50	592	2	50	57	6
0'52	0'00587	- 3	1'52	0'00070	+ 7
54	580	4	54	84	7
56	572	4	56	99	8
58	563	5	58	115	8
60	552	6	60	132	9
0'62	0'00540	- 6	1'62	0'00150	+ 9
64	527	7	64	169	10
66	513	8	66	188	10
68	498	8	68	208	10
70	481	9	70	229	10
0'72	0'00464	- 9	1'72	0'00249	+ 10
74	446	9	74	270	11
76	427	10	76	292	11
78	408	10	78	313	10
80	388	10	80	334	11
0'82	0'00367	- 11	1'82	0'00355	+ 10
84	346	10	84	375	10
86	325	11	86	396	10
88	304	10	88	416	10
90	283	11	90	435	9
0'92	0'00262	- 10	1'92	0'00453	+ 9
94	241	11	94	471	9
96	220	10	96	488	8
98	200	10	98	504	8
1'00	0'00180	- 10	2'00	0'00519	+ 7

Added Constant: 0'00300.

XXXII

1	2
M	Equation
d	
0'00	0'00150
04	166
08	181
12	195
16	209
20	222
0'24	0'00233
28	242
32	250
36	255
40	259
0'44	0'00260
48	259
52	256
56	251
60	243
0'64	0'00234
68	223
72	211
76	197
80	182
0'84	0'00167
88	152
92	136
96	121
1'00	106
1'04	0'00092
08	80
12	69
16	59
20	51
1'24	0'00045
28	42
32	40
36	41
40	44
1'44	0'00049
48	56
52	65
56	76
60	88
1'64	0'00101
68	116
72	131
76	147
80	162
1'84	0'00177
88	192
92	206
96	219
2'00	0'00230

Added Constant: 0'00150.

XXXIII

1	2
N	Equation
d	
0'00	0'00025
04	28
08	31
12	34
16	37
20	40
0'24	0'00042
28	44
32	46
36	47
40	48
0'44	0'00048
48	48
52	47
56	46
60	44
0'64	0'00042
68	40
72	38
76	35
80	32
0'84	0'00029
88	25
92	22
96	19
1'00	16
1'04	0'00013
08	10
12	8
16	6
20	4
1'24	0'00003
28	2
32	2
36	2
40	3
1'44	0'00004
48	5
52	7
56	9
60	12
1'64	0'00015
68	18
72	21
76	24
80	28
1'84	0'00031
88	34
92	37
96	39
2'00	0'00042

Added Constant: 0'00025.

XXXIV

1	2
O	Equation
d	
0'0	0'04525
1	4527
2	4529
3	4530
4	4531
5	4531
0'6	0'04530
7	4529
8	4527
9	4525
1'0	4523
1'1	0'04521
2	4520
3	4519
4	4519
5	4520
1'6	0'04522
7	4524
8	4526
9	4528
2'0	4529

Added Constant: 0'04525.

# SATELLITE I

## Tables of Longitude, Latitude, and Radius Vector

### XXXV—Occultations and Transits

To correct for the Jovicentric Latitude of the Earth the Satellites I latitude as derived from Tables XXX-XXXVI must be supplemented by the term—

$$\pm 143127 R_1 \sin (\odot - \Omega) / \Delta \begin{cases} +O_c \\ -T_1 \end{cases} \\ (915572)$$

where  $R_1$   $\Delta$  are the Geocentric Distances of the Sun and Jupiter respectively and  $\Omega$  is the Ascending Node of Jupiter's Orbit on the Ecliptic

The natural sign to apply for Occultations

The reversed sign to apply for Transits

The value of  $\Omega$  is given in Table C

### XXXVI

#### Correction of Latitude for Shadows and Transits

Lat	Corr Sh Tr
0 00	- 0 00044
04	39
08	35
12	31
16	6
20	2
0 24	- 0 017
28	13
32	9
36	- 4
40	0
0 44	+ 0 004
48	9
52	13
56	17
60	
0 64	+ 0 0 6
68	31
72	35
76	39
0 80	+ 00044

### XXXVII

#### Angle above Jupiter's Orbit

Lat	Angle	3 Lat	4 $\Delta$ o r
0 00	- 3 655 +	0 80	911
02	3 47 9	78	912
04	3 905	76	912
06	3 1081	74	912
08	2 9256	72	913
10	7430	70	913
0 12	- 5604 +	0 68	913
14	2 3777	66	914
16	2 1950	64	914
18	01 3	62	914
20	1 8295	60	914
0 22	- 1 6466 +	0 58	915
24	1 4637	56	915
26	1 808	54	915
28	1 0979	52	915
30	9150	50	915
0 32	- 0 7320 +	0 48	915
34	0 5490	46	915
36	0 3660	44	915
38	- 0 183 +	42	915
0 40	0 000	0 40	915

This Table gives the correction to be applied to the latitude derived from Tables XXX-XXXIV before using it for the purpose of finding the position of the satellite in the sky at the time of transit or occultation.

This Table gives the angle above the orbit of Jupiter which the satellite makes with the ecliptic at the time of transit or occultation.





# SATELLITE I

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## Tables

of the

Synodic Motion,

Duration of the Phenomena of Eclipse,

Occultation, Transit and Shadow-Transit,

with

Equations for Reduction to the Middle,

Corrections for Phase

and the

Light-Curve of Eclipse

# SATELLITE I

XXXVIII

Table of Synodic Motion

1	2	1	2	1	2	1	2
Angle	Value	Angle	Value	Angle	Value	Angle	Value
° ·000	d ·000000	° ·025	d ·000123	° ·050	d ·000246	° ·075	d ·000369
1	5	26	128	51	251	76	374
2	10	27	133	52	256	77	379
3	15	28	138	53	261	78	383
4	20	29	143	54	265	79	388
5	25	30	147	55	270	80	393
·006	·000029	·031	·000152	·056	·000275	·081	·000398
7	34	32	157	57	280	82	403
8	39	33	162	58	285	83	408
9	44	34	167	59	290	84	413
10	49	35	172	60	295	85	418
·011	·000054	·036	·000177	·061	·000300	·086	·000423
12	59	37	182	62	305	87	428
13	64	38	187	63	310	88	433
14	69	39	192	64	315	89	438
15	74	40	197	65	320	90	442
·016	·000079	·041	·000202	·066	·000324	·091	·000447
17	84	42	206	67	329	92	452
18	88	43	211	68	334	93	457
19	93	44	216	69	339	94	462
20	98	45	221	70	344	95	467
·021	·000103	·046	·000226	·071	·000349	·096	·000472
22	108	47	231	72	354	97	477
23	113	48	236	73	359	98	482
24	118	49	241	74	364	99	487
·025	·000123	·050	·000246	·075	·000369	·100	·000492

XXXIX

1	2
Angle	Value
° 0·0	d ·000000
·1	492
·2	983
·3	1475
·4	1967
·5	2458
0·6	·002950
·7	3441
·8	3933
·9	4425
1·0	·004916

These tables show the time taken to describe a given angle, with the Mean Synodic Motion. They are to be used for converting into time the Complement or excess of Jupiter's longitude over that of the Satellite at an assumed approximate time of conjunction.

To allow for the true Synodic Motion modify the entry of the table by applying to it its product by the Variation as taken from Tables XXV-XXIX.

# SATELLITE I

## Tables of the Phenomena

XL

Semiduration

L t	E l O	3 Δ oor	4 Co Sh T	L t
000	0 043653	+ 8	-49	800
004	43736	20 8	49	796
008	43819	20 5	49	792
012	43900	0 1	49	788
016	43980	2 0	49	784
020	44 60	19 8	49	780
024	44138	-19 4	-49	776
028	44 15	19 1	49	772
032	44 91	18 9	50	768
036	44366	18 8	5	764
040	44441	18 6	5	760
044	044515	+18 4	-50	756
048	44588	18	50	752
052	44659	18	50	748
056	4473	17 8	50	744
060	448	17 5	5	740
064	044869	+17 0	-50	736
068	44937	16 8	50	732
072	45 3	16 8	5	728
076	45070	16 5	50	724
080	45135	16 3	50	720
084	045199	-16 0	-5	716
088	45 63	15 8	51	712
092	453 6	15 5	51	708
096	45387	15 3	51	704
100	45448	15 0	51	700
104	045508	+14 8	-51	696
108	45567	14 8	51	692
112	456 5	14 5	51	688
116	4568	14 3	51	684
120	45739	14 0	51	680
124	045794	+13 8	-51	676
128	45849	13 6	51	672
132	45903	13 3	51	668
136	45955	13 0	51	664
140	460 8	12 8	51	660
144	046058	+1 8	-5	656
148	46109	12 5	5	652
152	46159	1 3	52	648
156	46 07	1	5	644
160	46 56	11 8	5	640
164	04630	+11 5	-52	636
168	46349	11 5	52	632
172	46394	11 3	5	628
176	46438	11 0	5	624
180	4648	10 8	52	620
184	04655 5	+10 5	-5	616
188	46567	10 3	52	612
192	46608	10 3	52	608
196	46648	10 0	52	604
200	046688	+ 9 8	-52	600

Lat	E l Oc	3 Δ oo	4 Corr Sh Tr	Lat
200	0 46688	+ 9 8	- 5	600
204	467 6	9 8	5	596
208	46764	9 5	5	592
212	4680	9 3	5	588
216	46838	9 0	5	584
220	46874	8 8	5	580
224	046908	+ 8 5	-52	576
228	4694	8 5	5	572
232	46975	8 3	53	568
236	47007	8 0	53	564
240	47 39	7 8	53	560
244	047070	+ 7 8	-53	556
248	47100	7 5	53	552
252	47129	7 3	53	548
256	47157	7 0	53	544
260	47185	6 8	53	540
264	047 11	+ 6 5	-53	536
268	47237	6 5	53	532
272	47 62	6 3	53	528
276	47287	6 0	53	524
280	47310	5 8	53	520
284	047333	+ 5 5	-53	516
288	47355	5 5	53	512
292	47376	5 3	53	508
296	47396	5 0	53	504
300	4741	5	53	500
304	047435	+ 4 5	-53	496
308	47453	4 5	53	492
312	47471	4 3	53	488
316	47488	4 0	53	484
320	47503	4 0	53	480
324	047518	+ 3 8	-53	476
328	47533	3 5	53	472
332	47546	3 5	53	468
336	47558	3 3	53	464
340	47570	3 0	53	460
344	047582	+ 2 8	-53	456
348	47592	5	53	452
352	4760	2 3	53	448
356	47610	2 3	53	444
360	47618	0	53	440
364	0476 6	+ 1 8	-53	436
368	47632	1 5	53	432
372	47638	1 3	53	428
376	47643	1 3	53	424
380	47647	1 0	53	420
384	047651	+ 0 8	-53	416
388	47653	0 5	53	412
392	47655	0 5	53	408
396	47656	+ 3	53	404
400	047657	0	-53	400

Equations of  
Semiduration  
XLI

Eel Oc	K	3 Sh Tr
0 000044	0 0	00 002
45	1	8
46	2	3
47	3	37
46	4	45
46	5	45
0 00047	0 6	000035
46	7	1
45	8	6
44	9	2
45	10	10
0 000047	1 1	0 0000 5
47	2	39
46	3	46
46	4	44
47	5	33
000046	1 6	0 000018
45	7	5
44	8	3
45	9	1
0 000047	2 0	0 000028

All 16 t t 00 44

XLII

a	Eel Oc
0	+ 000003
500	+
1000	0
1500	-
2000	- 3
2500	- 000003
3000	- 1
3500	+ 1
4000	+ 3
4500	+ 0000 3

XLIII

Ec Sh	β	3 Oc	4 Tr
6	0	11	1
9	50	1	6
1	100	10	10
9	150	5	12
6	200	1	11
3	250	0	6
2	300	2	2
4	350	7	1
6	400	11	1

S l t t d O t t 300 Th Ag m t t l L t t d l i d f m T b l XXX XXXVI F Sh d w  
d T t t h t l C l 4 m t h p p l d t t l t i C l T t t r y m t b t d l b y t l  
E l t l f T l l XLI XLIV F Sh d w l T t t m t l b t l f J p t Ph b y T b l l i

Th l t q l 0000  
Add d O t a t 00006

# SATELLITE I

## Tables of the Phenomena

XLIV

Equation of the Semiduration

Ecl., Oc., Sh., Tr.

Lat. Var.	'00 '80	'02 '78	'04 '76	'06 '74	'08 '72	'10 '70	'12 '68	'14 '66	'16 '64	'18 '62	'20 '60	'22 '58	'24 '56	'26 '54	'28 '52	'30 '50	'32 '48	'34 '46	'36 '44	'38 '42	'40
- '0100	75	68	62	56	51	46	42	37	33	30	27	24	22	19	17	16	14	13	12	12	12
96	82	76	70	64	59	55	50	46	43	39	36	33	31	29	27	25	24	23	22	22	22
92	89	83	77	72	67	62	58	54	51	47	45	42	40	38	36	34	33	32	31	31	31
88	96	90	85	80	75	71	67	63	60	57	54	51	49	47	46	44	43	42	41	41	41
84	103	97	92	87	83	79	75	71	68	65	62	60	58	56	54	52	52	51	50	50	50
80	110	105	100	95	91	87	84	80	77	74	72	69	68	66	64	63	62	61	60	60	60
- '0076	117	112	107	103	99	95	91	88	85	83	80	78	76	74	73	72	71	70	69	69	69
72	124	119	115	111	107	103	100	97	94	92	90	88	86	84	83	82	81	80	79	79	79
68	131	126	122	118	115	111	108	105	103	100	98	96	94	93	92	90	90	89	88	88	88
64	138	134	130	126	123	120	117	114	112	109	107	106	104	103	101	100	100	99	98	98	98
60	145	141	137	134	131	127	125	122	120	118	116	114	113	111	110	109	108	108	107	107	107
- '0056	152	148	145	142	139	136	133	131	129	127	125	124	122	121	120	119	118	118	117	117	117
52	159	155	152	149	146	144	141	139	137	135	134	132	131	130	129	128	127	127	126	126	126
48	166	163	160	157	154	152	150	148	146	145	143	142	141	139	139	138	137	137	136	136	136
44	173	170	167	165	162	160	158	156	154	153	152	150	149	148	147	147	146	146	145	145	145
40	180	177	175	173	170	169	167	165	164	162	161	160	159	158	157	156	156	155	155	155	155
- '0036	187	184	182	180	178	176	175	173	172	170	169	168	167	167	166	165	165	164	164	164	164
32	194	192	190	188	186	185	183	182	181	180	179	178	177	176	176	175	175	174	174	174	174
28	201	199	197	196	194	193	191	190	189	188	187	186	186	185	184	184	184	183	183	183	183
24	208	206	205	204	202	201	200	199	198	197	197	196	195	195	194	194	194	193	193	193	193
20	215	213	212	211	210	209	208	207	206	206	205	204	204	203	203	203	202	202	202	202	202
- '0016	222	221	220	219	218	217	217	216	215	215	214	214	214	213	213	213	212	212	212	212	212
12	229	228	227	227	226	225	225	224	224	223	223	222	222	222	222	221	221	221	221	221	221
8	236	235	235	235	234	234	233	233	233	232	232	232	232	232	231	231	231	231	231	231	231
- '0004	243	242	242	242	242	241	241	241	241	241	241	240	240	240	240	240	240	240	240	240	240
0	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
+ '0004	257	258	258	258	258	259	259	259	259	259	259	260	260	260	260	260	260	260	260	260	260
8	264	265	265	266	266	266	267	267	267	268	268	268	268	268	269	269	269	269	269	269	269
12	271	272	273	274	274	275	275	276	276	277	277	278	278	278	278	279	279	279	279	279	279
16	278	279	280	281	282	283	283	284	285	285	286	286	286	287	287	287	288	288	288	288	288
20	285	287	288	289	290	291	292	293	294	294	295	296	296	297	297	297	298	298	298	298	298
+ '0024	292	294	295	297	298	299	300	301	302	303	303	304	305	305	306	306	306	307	307	307	307
28	299	301	303	305	306	307	309	310	311	312	313	314	314	315	316	316	316	317	317	317	317
32	306	308	310	312	314	315	317	318	319	320	321	322	323	324	324	325	325	326	326	326	326
36	313	316	318	320	322	324	325	327	328	330	331	332	333	333	334	335	335	336	336	336	336
40	320	323	325	327	330	331	333	335	336	338	339	340	341	342	343	344	344	345	345	345	345
+ '0044	327	330	333	335	338	340	342	344	346	347	348	350	351	352	353	353	354	354	355	355	355
48	334	337	340	343	346	348	350	352	354	355	357	358	359	361	361	362	363	363	364	364	364
52	341	345	348	351	354	356	359	361	363	365	366	368	369	370	371	372	373	373	374	374	374
56	348	352	355	358	362	364	367	369	371	373	375	376	378	379	380	381	382	382	383	383	383
60	355	359	363	366	370	373	375	378	380	382	384	386	387	389	390	391	392	392	393	393	393
+ '0064	362	366	370	374	377	380	383	386	388	391	393	394	396	397	399	400	400	401	402	402	402
68	369	374	378	382	385	389	392	395	397	400	402	404	406	407	408	410	410	411	412	412	412
72	376	381	385	389	393	397	400	403	406	408	410	412	414	416	417	418	419	420	421	421	421
76	383	388	393	397	401	405	409	412	415	417	420	422	424	426	427	428	429	430	431	431	431
80	390	395	400	405	409	413	416	420	423	426	428	431	432	434	436	437	438	439	440	440	440
+ '0084	397	403	408	413	417	421	425	429	432	435	438	440	442	444	446	448	449	449	450	450	450
88	404	410	415	420	425	429	433	437	440	443	446	449	451	453	454	456	457	458	459	459	459
92	411	417	423	428	433	438	442	446	449	453	455	458	460	462	464	466	467	468	469	469	469
96	418	424	430	436	441	445	450	454	457	461	464	467	469	471	473	475	476	477	478	478	478
+ '0100	425	432	438	444	449	454	458	463	467	470	473	476	478	481	483	484	486	487	488	488	488

The unit in this Table equals 0<sup>d</sup>.0000001.

Added Constant: +0<sup>d</sup>.000250.

# SATELLITE I

## Tables of the Phenomena

XLV

Reductions to Middle

Argument K

Ecl Oc	Δ	3 K	4 Sh Tr	5 Δ
- 000034	- 29	0 00	- 000 66	- 38
62	8	01	103	38
91	9	02	41	38
119	8	03	178	37
146	7	04	14	36
173	7	05	249	35
- 000199	- 6	0 06	- 00 83	- 34
2 4	5	07	316	33
249	5	08	349	3
73	3	09	380	30
95	1	10	409	8
- 0 315	- 20	0 11	- 000436	- 7
335	19	12	46	5
353	17	13	486	3
369	16	14	5 7	0
384	14	15	5 6	18
- 0 0397	- 12	0 16	- 00054	- 15
407	10	17	556	13
416	9	18	568	12
4 4	7	19	579	9
429	4	20	586	5
- 00043	-	0 21	- 000589	- 3
433	- 1	22	591	- 1
43	+ 1	23	59	+
43	4	24	587	5
4 5	6	25	580	8
- 0 418	+ 8	0 26	- 00571	+ 1
41	10	27	56	1
399	1	28	546	15
387	13	29	53	17
373	15	30	512	0
- 000357	+ 17	0 31	- 0491	+ 23
339	19	32	467	5
3		33	441	6
30	1	34	4 5	27
78	23	35	387	30
- 000 54	+ 4	0 36	- 0 356	+ 3
30	5	37	3 4	33
05	26	38	91	34
179	27	39	57	35
5	27	40	2 2	36
- 000125	+ 8	0 41	- 000186	+ 37
97	28	42	149	37
69	9	43	112	38
4	9	44	74	38
- 12	8	45	- 37	37
+ 000016	+ 28	0 46	000000	+ 37
44	28	47	37	37
7	28	48	73	36
99	7	49	1 9	35
+ 0001 5	+ 6	0 50	+ 000143	+ 34

Ecl O	Δ	3 K	4 Sh Tr	5 Δ
+ 000125	+ 6	0 50	+ 00 143	+ 34
151	26	51	177	34
176	4	52	1	32
199	23	53	241	31
2	2	54	271	29
243	1	55	98	7
+ 00 63	+ 19	0 56	+ 0003 4	+ 5
281	18	57	348	3
298	16	58	370	1
31	14	59	389	18
3 5	13	60	4 6	17
+ 00337	+ 11	0 61	+ 0 0422	+ 15
347	9	62	435	1
355	7	63	446	9
360	4	64	45	5
363	3	65	456	4
+ 000365	+ 1	0 66	+ 000459	+
365	- 1	67	459	-
363	3	68	456	4
359	6	69	451	7
35	8	70	442	10
+ 000344	- 9	0 71	+ 000431	- 12
334	11	72	418	15
3 2	13	73	4 2	17
308	15	74	384	0
9	17	75	363	22
+ 000 75	- 18	0 76	+ 000340	- 4
256		77	315	6
36	1	78	289	7
213		79	61	9
19	24	80	31	31
+ 000168	5	0 81	+ 000200	- 32
143	26	82	167	34
117	27	83	133	35
90	27	84	97	36
63	8	85	61	37
+ 0 035	- 28	0 86	+ 000 4	- 37
7	8	87	12	37
1	8	88	49	37
49	29	89	86	38
78	29	90	124	38
- 0 106	- 28	0 91	- 000161	- 37
133	7	92	197	36
161	28	93	233	36
188	26	94	268	34
13	25	95	301	33
- 000238	- 25	0 96	- 0 0334	- 33
262	3	97	366	31
284	22	98	395	29
306	1	99	423	28
- 0 0326	- 19	1 00	- 000450	- 26

S bt t l O t t      Thi T bl i l d      t tp ti      fth Eq ti fLight( I d )      Th E ty must b  
 ppl t d bytl Eq t      f l bl XLVI L      Th wh l      tb rr t d by d d i g t it l f t p d t by th V i t i      d w fr  
 T bl XXV XXIX      F Sh d      d T      it it m t l b      t d f J pit      Ph      by l bl LI

# SATELLITE I

## Tables of the Phenomena

XLV continued

Reductions to Middle

Argument K

1	2	3	4	5
Ecl., Oc.	$\Delta$	K	Sh., Tr.	$\Delta$
<sup>d</sup> - '000326	- 19	<sup>d</sup> 1'00	<sup>d</sup> - '000450	- 26
345	18	'01	475	24
362	17	'02	498	22
378	15	'03	518	19
392	13	'04	535	17
402	11	'05	550	14
- '000412	- 10	1'06	- '000563	- 13
421	8	'07	575	11
427	6	'08	584	7
431	3	'09	588	4
433	- 2	'10	591	- 2
- '000433	0	1'11	- '000591	+ 1
431	+ 3	'12	589	4
428	5	'13	584	7
422	7	'14	576	9
415	9	'15	565	11
- '000404	+ 11	1'16	- '000553	+ 14
392	13	'17	538	16
380	14	'18	521	19
365	16	'19	502	22
348	18	'20	478	24
- '000329	+ 20	1'21	- '000453	+ 26
310	21	'22	427	27
289	22	'23	401	29
265	24	'24	371	31
241	25	'25	339	33
- '000217	+ 26	1'26	- '000307	+ 34
191	27	'27	273	35
164	27	'28	238	36
138	28	'29	203	37
110	28	'30	166	37
- '000082	+ 29	1'31	- '000129	+ 38
53	29	'32	91	38
25	29	'33	54	38
3	28	'34	17	37
31	28	'35	+ 20	37
+ '000059	+ 28	1'36	+ '000057	+ 37
87	28	'37	93	36
113	27	'38	127	35
139	26	'39	161	34
165	25	'40	195	33
+ '000188	+ 24	1'41	+ '000227	+ 32
212	23	'42	258	30
233	22	'43	286	28
254	20	'44	313	26
273	19	'45	337	24
+ '000291	+ 17	1'46	+ '000360	+ 22
306	15	'47	381	20
319	14	'48	399	18
332	12	'49	415	16
+ '000343	+ 10	1'50	+ '000430	+ 14

1	2	3	4	5
Ecl., Oc.	$\Delta$	K	Sh., Tr.	$\Delta$
<sup>d</sup> + '000343	+ 10	<sup>d</sup> 1'50	<sup>d</sup> + '000430	+ 14
352	8	'51	442	11
358	6	'52	450	7
362	4	'53	454	5
365	+ 2	'54	458	+ 3
365	0	'55	460	0
+ '000364	- 2	1'56	+ '000458	- 3
362	5	'57	454	6
356	7	'58	447	9
348	9	'59	436	11
339	10	'60	425	14
+ '000328	- 12	1'61	+ '000410	- 16
315	14	'62	393	19
300	16	'63	373	21
283	18	'64	351	23
265	19	'65	327	25
+ '000246	- 21	1'66	+ '000301	- 27
225	22	'67	274	28
203	23	'68	245	30
179	25	'69	215	32
155	26	'70	183	33
+ '000129	- 27	1'71	+ '000149	- 35
102	27	'72	113	36
76	28	'73	78	37
48	28	'74	41	37
+ 20	28	'75	+ 5	37
- '000008	- 28	1'76	- '000032	- 37
36	29	'77	69	38
65	29	'78	107	38
93	29	'79	144	38
120	28	'80	181	37
- '000148	- 28	1'81	- '000217	- 36
176	27	'82	252	35
202	26	'83	286	34
227	25	'84	319	33
251	24	'85	352	32
- '000274	- 23	1'86	- '000382	- 30
296	22	'87	410	29
317	20	'88	438	27
336	19	'89	464	25
354	17	'90	488	23
- '000370	- 16	1'91	- '000509	- 20
385	14	'92	528	18
398	12	'93	543	15
408	10	'94	557	13
417	9	'95	569	12
- '000425	- 7	1'96	- '000580	- 9
429	4	'97	586	5
432	2	'98	589	3
433	- 1	'99	591	- 1
- '000432	+ 2	2'00	- '000590	+ 2

Applied Constant: -0'000050.

This Table includes a constant portion of the Equation of Light (see *Introduction*).

The Entry must be

supplemented by the Equations of Tables XLVI-L.

The whole must be corrected by adding to itself its product by the Variation as drawn from

Tables XXV-XXIX.

For Shadows and Transits it must also be corrected for Jupiter's Phase by Table LI.

# SATELLITE I

## Tables of the Phenomena

XLVI

Equation of the Reduction

Occultations only

$\gamma$	$K$	$0^d 0$	$0^d 1$	$0^d 2$	$0^d 3$	$0^d 4$	$0^d 5$	$0^d 6$	$0^d 7$	$0^d 8$	$0^d 9$	$1^d 0$	$1^d 1$	$1^d 2$	$1^d 3$	$1^d 4$	$1^d 5$	$1^d 6$	$1^d 7$	$1^d 8$	$1^d 9$	$2^d 0$
$\gamma$	$K$	$0^d 0$	$0^d 1$	$0^d 2$	$0^d 3$	$0^d 4$	$0^d 5$	$0^d 6$	$0^d 7$	$0^d 8$	$0^d 9$	$1^d 0$	$1^d 1$	$1^d 2$	$1^d 3$	$1^d 4$	$1^d 5$	$1^d 6$	$1^d 7$	$1^d 8$	$1^d 9$	$2^d 0$
0	0	+ 3	+ 3	+	+ 1	0	- 1	-	-	3	3	3	-	- 1	0	+	1	+ 2	+ 3	+ 3	+ 3	+ 2
20	20	+ 5	+ 23	+ 19	+ 1	+ 4	- 5	- 3	- 9	- 3	- 5	- 3	18	- 11	- 2	+ 6	+ 14	+ 0	+ 24	+ 4	+ 2	+ 17
40	40	+ 43	+ 41	+ 33	+ 1	+ 7	- 9	- 3	34	- 41	- 43	- 4	31	- 19	- 4	+ 11	+ 25	+ 36	+ 42	+ 43	+ 39	+ 30
60	60	+ 57	+ 54	+ 43	+ 8	+ 9	- 1	- 30	- 45	- 55	57	- 5	41	- 5	- 5	+ 15	+ 33	+ 47	+ 56	+ 57	+ 51	+ 39
80	80	+ 64	+ 6	+ 49	+ 31	+ 10	- 13	- 34	- 51	- 61	- 64	59	- 46	- 8	- 6	+ 17	+ 37	+ 53	+ 6	+ 64	+ 57	+ 44
100	100	+ 64	+ 60	+ 48	+ 31	+ 10	- 13	- 34	- 51	61	- 63	- 58	- 46	- 28	- 6	+ 16	+ 37	+ 53	+ 62	+ 63	+ 57	+ 43
120	120	+ 56	+ 5	+ 4	+ 27	+ 8	- 11	- 30	- 44	- 53	- 56	- 51	- 40	4	- 5	+ 14	+ 3	+ 46	+ 54	+ 55	+ 50	+ 38
140	140	+ 41	+ 39	+ 31	+ 0	+ 6	- 8	-	- 33	- 39	- 41	- 38	- 30	- 18	4	+ 11	+ 4	+ 34	+ 4	+ 41	+ 37	+ 28
160	160	+ 22	+ 1	+ 17	+ 11	+ 3	- 4	- 1	- 17	- 21	-	-	- 16	- 10	- 2	+ 6	+ 13	+ 18	+ 21	+	+	+ 15
180	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	200	2	0	- 16	- 11	3	+ 4	+ 12	+ 17	+ 1	+	+	+ 16	+ 9	+	- 6	1	- 18	- 1	-	- 19	- 15
220	220	41	- 39	- 31	-	- 6	+ 8	+ 2	+ 33	+ 39	+ 41	+ 38	+ 30	+ 18	+ 4	- 11	- 4	- 34	- 40	- 41	37	8
240	240	- 56	- 5	- 4	- 7	8	+ 11	+ 30	+ 44	+ 53	+ 56	+ 51	+ 4	+ 4	+ 5	- 14	3	- 4	- 54	55	- 50	- 38
260	260	- 64	- 60	- 48	- 31	- 10	+ 13	+ 34	+ 51	+ 61	+ 64	+ 58	+ 46	+ 28	+ 6	- 16	- 37	- 53	- 6	- 63	57	- 43
280	280	- 64	- 60	- 49	31	- 10	+ 13	+ 34	+ 51	+ 61	+ 64	+ 59	+ 46	+ 8	+ 6	- 17	- 37	- 54	- 63	- 65	- 58	- 44
300	300	- 57	- 54	- 43	- 8	- 9	+	+ 30	+ 45	+ 55	+ 57	+ 53	+ 41	+ 5	+ 5	- 15	- 33	- 47	- 56	- 57	- 51	- 39
320	320	- 44	- 41	33	- 1	- 7	+ 9	+ 23	+ 35	+ 4	+ 43	+ 4	+ 31	+ 19	+ 4	- 11	- 25	- 36	4	- 43	39	- 3
340	340	- 25	- 3	- 19	- 12	- 4	+ 5	+ 13	+ 2	+ 4	+ 5	+ 23	+ 18	+ 11	+	- 6	- 14	- 0	- 4	- 5	22	- 17
360	360	- 3	- 3	- 2	1	0	+ 1	+	+ 2	+ 3	+ 3	+ 3	+ 2	+ 1	0	- 1	- 2	- 3	- 3	- 3	- 3	-
380	380	+ 19	+ 18	+ 14	+ 9	+ 3	- 4	- 10	- 15	- 18	19	- 17	- 14	- 8	-	+ 5	+ 11	+ 16	+ 18	+ 19	+ 17	+ 13
400	400	+ 39	+ 36	+ 9	+ 19	+ 6	- 8	- 1	- 31	- 37	- 39	- 36	- 8	- 17	- 4	+ 10	+ 2	+ 3	+ 38	+ 39	+ 35	+ 6

TL i tli F lli ∞ N C t tli l l d l

XLVII

Equation of the Reduction

Transits only

$\gamma$	$K$	$0^d 0$	$0^d 1$	$0^d 2$	$0^d 3$	$0^d 4$	$0^d 5$	$0^d 6$	$0^d 7$	$0^d 8$	$0^d 9$	$1^d 0$	$1^d 1$	$1^d 2$	$1^d 3$	$1^d 4$	$1^d 5$	$1^d 6$	$1^d 7$	$1^d 8$	$1^d 9$	$2^d 0$
$\gamma$	$K$	$0^d 0$	$0^d 1$	$0^d 2$	$0^d 3$	$0^d 4$	$0^d 5$	$0^d 6$	$0^d 7$	$0^d 8$	$0^d 9$	$1^d 0$	$1^d 1$	$1^d 2$	$1^d 3$	$1^d 4$	$1^d 5$	$1^d 6$	$1^d 7$	$1^d 8$	$1^d 9$	$2^d 0$
0	0	- 4	- 4	- 3	- 2	- 1	+ 1	+	+ 3	+ 4	+ 4	+ 3	+ 3	+ 2	0	- 1	- 2	- 3	- 4	- 4	3	- 3
20	20	- 33	- 31	24	16	- 5	+ 7	+ 17	+ 6	+ 31	+ 33	+ 30	+ 3	+ 14	+ 3	- 8	- 19	- 27	- 31	- 33	- 29	- 2
40	40	- 57	- 54	- 43	- 8	- 9	+ 1	+ 31	+ 45	+ 55	+ 57	+ 53	+ 41	+ 5	+ 5	- 15	- 33	47	- 55	- 57	- 51	- 39
60	60	- 76	- 71	- 57	- 37	- 11	+ 16	+ 4	+ 60	+ 72	+ 76	+ 70	+ 55	+ 33	+ 7	- 19	44	- 6	- 73	- 76	- 68	- 5
80	80	- 85	- 80	- 64	- 4	- 13	+ 18	+ 45	+ 67	+ 81	+ 85	+ 78	+ 61	+ 37	+ 8	- 2	- 49	- 70	- 82	- 85	- 76	- 58
100	100	- 84	- 79	- 64	- 41	- 13	+ 18	+ 45	+ 67	+ 80	+ 84	+ 77	+ 61	+ 36	+ 8	- 2	- 49	- 70	- 81	- 84	- 76	- 58
120	120	- 74	- 70	- 56	36	- 11	+ 15	+ 40	+ 58	+ 70	+ 74	+ 68	+ 53	+ 3	+ 7	- 19	- 43	- 61	- 71	74	- 66	- 51
140	140	- 55	- 5	- 41	7	- 8	+ 11	+ 9	+ 43	+ 5	+ 55	+ 50	+ 39	+ 4	+ 5	- 14	- 3	- 45	- 53	- 55	- 49	38
160	160	- 9	- 27	-	- 14	- 4	+ 6	+ 16	+ 3	+ 28	+ 9	+ 7	+ 1	+ 13	+ 3	- 7	- 17	- 24	8	- 9	- 6	- 20
180	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	200	+ 29	+ 7	+ 2	+ 14	+ 4	- 6	- 15	- 23	27	- 29	6	- 21	- 1	- 3	+ 7	+ 17	+ 24	+ 8	+ 29	+ 6	+ 0
220	220	+ 54	+ 51	+ 41	+ 7	+ 8	- 11	- 29	43	- 5	54	- 50	39	- 3	- 5	+ 14	+ 3	+ 45	+ 53	+ 54	+ 49	+ 37
240	240	+ 74	+ 69	+ 56	+ 36	+ 11	- 15	39	- 58	- 70	- 74	- 68	- 53	- 3	- 7	+ 19	+ 43	+ 61	+ 71	+ 74	+ 65	+ 51
260	260	+ 84	+ 79	+ 64	+ 41	+ 13	- 18	- 45	- 67	- 80	- 84	- 77	- 61	36	- 8	+	+ 49	+ 7	+ 81	+ 84	+ 76	+ 58
280	280	+ 85	+ 80	+ 64	+ 4	+ 13	- 18	- 45	- 67	- 81	85	- 78	- 61	- 37	- 8	+	+ 49	+ 70	+ 8	+ 85	+ 76	+ 58
300	300	+ 76	+ 71	+ 57	+ 37	+ 11	- 16	- 41	- 60	- 7	- 76	- 7	- 55	- 33	- 7	+ 19	+ 44	+ 63	+ 73	+ 76	+ 68	+ 52
320	320	+ 58	+ 54	+ 44	+ 8	+ 9	- 1	- 31	- 46	- 55	- 58	- 53	- 42	- 5	- 5	+ 15	+ 34	+ 48	+ 56	+ 58	+ 52	+ 4
340	340	+ 33	+ 31	+ 5	+ 16	+ 5	- 7	- 18	- 6	- 31	- 33	- 30	- 4	- 14	- 3	+	+ 19	+ 7	+ 3	+ 33	+ 29	+ 22
360	360	+ 4	+ 4	+ 3	+	+ 1	- 1	- 2	- 3	- 4	- 4	- 4	- 3	-	0	+ 1	+	+ 3	+ 4	+ 4	+ 4	+ 3
380	380	- 25	- 24	19	- 1	- 4	+ 5	+ 13	+	+ 4	+ 25	+ 23	+ 18	+ 11	+	- 6	- 15	- 21	- 4	- 25	- 2	- 17
400	400	- 51	- 48	- 39	- 25	- 8	+ 11	+ 8	+ 41	+ 49	+ 51	+ 47	+ 37	+ 2	+ 5	- 13	- 30	- 4	- 50	- 51	- 46	- 35

Th t tli T bl ∞ N C t th b d d d



# SATELLITE I

## Tables of the Phenomena

Equations of the Reduction  
XLVIII

1	2
A	E., O., S., T.
d 0'0	+ '000035
'1	46
'2	57
'3	64
'4	68
'5	67
0'6	+ '000063
'7	55
'8	44
'9	32
1'0	21
'1	+ '000011
'2	4
'3	1
'4	3
'5	8
1'6	+ '000016
'7	27
'8	39
'9	50
2'0	60
2'1	+ '000066
'2	68
'3	66
'4	60
'5	51
2'6	+ '000040
'7	28
'8	17
'9	8
3'0	3
3'1	+ '000001
'2	4
'3	10
'4	20
'5	31
3'6	+ '000043
'7	54
'8	63
'9	67
4'0	+ '000068

Added Constant: +0'000035.

XLIX

1	2
P	E., O., S., T.
d 0'00	+ '000010
'05	8
'10	5
'15	4
'20	3
'25	3
0'30	+ '000004
'35	6
'40	8
'45	10
'50	13
0'55	+ '000015
'60	17
'65	18
'70	17
'75	16
0'80	+ '000014
'85	12
'90	9
'95	7
1'00	+ '000004

Added Constant: +0'000070.

### L

1	2
Q	E., O., S., T.
d 0'0	+ '000005
'1	3
'2	2
'3	2
'4	4
'5	6
0'6	+ '000008
'7	8
'8	7
'9	5
1'0	+ '000003

Added Constant: +0'000005.

LI Corrections for Phase Sh., Tr.

1	2	3	4	5
Additional Equation to Semiduration.	P ±	Correcting Factor to Semiduration.	Δ 0d'001	Correcting Factor to Reduction.
d '000000	d 0'000	'00000	0	0'0000
0	'002	- '00003	- 3	- 0'0001
0	'004	11	5	2
0	'006	24	8	5
0	'008	42	10	8
+ 1	'010	65	13	13
+ '000001	0'012	- '00093	- 16	- '0018
1	'014	127	18	25
2	'016	166	21	33
2	'018	210	23	41
2	'020	259	26	51
+ '000003	0'022	- '00313	- 29	- '0061
3	'024	373	31	73
4	'026	438	34	86
4	'028	508	36	100
5	'030	583	39	115
+ '000006	0'032	- '00664	- 42	- '0131
6	'034	750	44	148
7	'036	840	46	165
8	'038	935	49	184
9	'040	1036	52	205
+ '000010	0'042	- '01142	- 54	- '0226
11	'044	1253	57	248
12	'046	1369	59	272
13	'048	1490	62	296
14	'050	1616	65	322
+ '000015	0'052	- '01748	- 67	- '0349
16	'054	1884	70	377
16	'056	2026	72	406
17	'058	2173	75	437
17	'060	2324	77	468
17	'062	2482	81	501
+ '000017	0'064	- '02649	- 86	- '0536

The Argument of this Table is the Annual Parallax  $p$ , computed from the Approximate Tables IV, V, VI.

No Constant has been added to Column 1, which gives an Additional Equation to the Semiduration. Columns 3 and 4 must be multiplied into the Semiduration as taken from Tables XL-XLIV, and the Reduction as taken from Tables XLV-L, respectively, and the products taken as further corrections to these quantities.

When  $p$  is positive, these corrections apply to Shadow Ingress and Transit Egress; when  $p$  is negative, they apply to Shadow Egress and Transit Ingress.

# SATELLITE I

## Tables of the Phenomena

LII  
Standard Light Curve of Eclipse

/	M gnitude
-50	000
40	
38	04
36	6
34	08
32	11
-30	013
28	16
26	19
24	22
22	5
20	29
18	32
16	35
14	39
12	43
-10	048
08	53
06	58
04	64
-02	7
00	075

h C d i t k i t l f t  
s w i l l i t f l y p i t  
s t l i t

/	M gnitude
00	075
+02	8
04	88
06	95
08	103
10	110
+12	119
14	18
16	138
18	15
20	161
+22	173
24	187
26	0
28	218
30	37
+32	256
34	78
36	30
38	333
40	374
+42	430

l t l f t l i f t l  
f t h c t i t l

LIII—Mean Motion  
in Light Curve

Latitude	$\Delta$ / per 1	Latitude
00	0416	80
02	41	78
04	45	76
06	48	74
08	43	72
10	435	70
12	0438	68
14	441	66
16	444	64
18	446	62
20	449	60
22	0451	58
24	45	56
26	454	54
28	455	52
30	456	50
32	0457	48
34	458	46
36	459	44
38	459	42
40	0459	40

LIV—Equation  
of Motion

Variation	Correction
-010	+002
-005	+0001
000	0000
+005	001
+010	-00

l l A g t f t l T b l  
i t l V i t l i l f m  
1 b l XXV XXIX t l C  
t l i t b p l l t t l  
E q t l f i b l T H H

T l \ l i t y f k p  
d i l f m l l l L X I I I L I V  
i t l t k l t h l g  
+ f D i p l  
f R p p



# SATELLITE II



## Approximate Tables

of

Heliocentric and Geocentric Conjunction

# SATELLITE II

## Approximate Tables of Conjunction

### I Epochs of Conjunction

1	2	3	4	5	6	7	8	9	
Year	Conjunction	Variation for 100 <sup>d</sup>	$\alpha$	Variation for 100 <sup>d</sup>	$\beta$	$\gamma$	$\delta$	$\epsilon$	
<b>1850</b>	<sup>d</sup> 2'3345	...	<sup>d</sup> 1787'4	+ '04	<sup>d</sup> 334'70	<sup>d</sup> 1'9	<sup>d</sup> 0'911	<sup>d</sup> 1'95	The constant - 0 <sup>d</sup> .1000 has been applied to each entry in column 2.
<b>1851</b>	3'4062	...	2153'6	+ '04	301'89	2'7	0'335	2'25	
<b>*1852</b>	0'9240	...	2516'3	+ '04	265'53	365'2	3'255	2'54	
<b>1853</b>	0'9958	...	2882'5	+ '01	232'71	0'8	2'679	2'84	
<b>1854</b>	2'0675	...	3248'6	+ '01	199'90	1'6	2'102	3'14	
<b>1855</b>	3'1393	...	3614'8	- '03	167'09	2'4	1'526	3'44	The constant - 0 <sup>d</sup> .080 has been applied to each entry in columns 8, 9.
<b>*1856</b>	0'6566	...	3977'1	- '04	130'72	364'9	0'921	0'19	
<b>1857</b>	0'7283	...	10'4	- '01	97'91	0'5	0'344	0'49	
<b>1858</b>	1'7999	...	376'4	- '01	65'10	1'3	3'293	0'79	
<b>1859</b>	2'8716	...	742'5	+ '01	32'29	2'1	2'716	1'09	
<b>*1860</b>	0'3893	...	1105'1	+ '04	394'80	364'6	2'111	1'39	For Eclipses the argument $\gamma$ is not wanted.
<b>1861</b>	0'4612	+ '0001	1471'4	+ '07	361'99	0'2	1'535	1'69	
<b>1862</b>	1'5331	...	1837'7	+ '04	329'18	1'0	0'958	1'99	
<b>1863</b>	2'6048	...	2203'8	- '04	296'37	1'8	0'382	2'29	
<b>*1864</b>	0'1222	- '0001	2566'0	- '13	260'00	364'3	3'302	2'59	
<b>1865</b>	0'1934	- '0001	2931'5	- '16	227'19	365'1	2'725	2'89	Column 2 corrected by the equations from the following tables, gives superior conjunction as required for Eclipses and Occultations. To find inferior conjunction for Shadows and Transits, add (or subtract) one half the synodic period, i. e. 1 <sup>d</sup> .7770, to the numbers of columns 2, 4, 6, 7, 8, 9.
<b>1866</b>	1'2647	- '0002	3297'1	- '20	194'38	0'7	2'149	3'19	
<b>1867</b>	2'3356	- '0001	3662'2	- '17	161'56	1'5	1'573	3'48	
<b>*1868</b>	3'4071	...	4028'0	- '04	128'75	2'3	0'996	0'23	
<b>1869</b>	3'4788	...	61'6	+ '06	95'94	3'1	0'420	0'53	
<b>1870</b>	0'9967	+ '0001	424'5	+ '16	59'57	0'4	3'340	0'83	
<b>1871</b>	2'0690	+ '0002	791'3	+ '21	26'76	1'2	2'763	1'13	
<b>*1872</b>	3'1414	+ '0002	1158'1	+ '20	392'83	2'0	2'187	1'43	
<b>1873</b>	3'2135	+ '0001	1524'8	+ '13	360'02	2'8	1'610	1'73	
<b>1874</b>	0'7314	...	1887'6	+ '03	323'65	0'0	1'005	2'03	
<b>1875</b>	1'8030	- '0001	2253'6	- '10	290'84	0'9	0'429	2'33	
<b>*1876</b>	2'8742	- '0002	2619'1	- '18	258'03	1'7	3'378	2'63	
<b>1877</b>	2'9453	- '0002	2984'4	- '19	225'22	2'5	2'801	2'93	
<b>1878</b>	0'4624	- '0001	3346'3	- '18	188'85	365'0	2'196	3'23	
<b>1879</b>	1'5336	- '0001	3711'7	- '10	156'04	0'6	1'619	3'52	
<b>*1880</b>	2'6052	...	4077'7	+ '03	123'23	1'4	1'043	0'27	
<b>1881</b>	2'6771	+ '0001	111'5	+ '13	90'41	2'2	0'466	0'57	
<b>1882</b>	0'1952	+ '0001	474'6	+ '17	54'05	364'7	3'387	0'87	
<b>1883</b>	1'2674	+ '0001	841'3	+ '14	21'24	0'2	2'810	1'17	
<b>*1884</b>	2'3395	+ '0001	1207'7	+ '07	387'31	1'1	2'234	1'47	
<b>1885</b>	2'4112	...	1573'9	- '01	354'50	1'9	1'657	1'77	
<b>1886</b>	3'4828	- '0001	1939'8	- '08	321'68	2'7	1'081	2'07	
<b>1887</b>	1'0000	- '0001	2301'9	- '11	285'32	365'2	0'476	2'37	
<b>*1888</b>	2'0714	- '0001	2667'6	- '10	252'50	0'8	3'425	2'67	
<b>1889</b>	2'1429	...	3033'3	- '06	219'69	1'6	2'848	2'97	
<b>1890</b>	3'2145	...	3399'3	+ '03	186'88	2'4	2'272	3'27	
<b>1891</b>	0'7323	+ '0001	3762'1	+ '10	150'51	364'9	1'666	0'02	
<b>*1892</b>	1'8044	+ '0001	4128'6	+ '11	117'70	0'5	1'090	0'32	
<b>1893</b>	1'8764	+ '0001	162'5	+ '11	84'89	1'3	0'513	0'62	
<b>1894</b>	2'9484	+ '0001	528'9	+ '08	52'08	2'1	3'462	0'92	
<b>1895</b>	0'4662	...	891'7	+ '01	15'71	364'6	2'857	1'21	
<b>*1896</b>	1'5378	...	1257'6	- '04	381'78	0'1	2'281	1'51	
<b>1897</b>	1'6093	- '0001	1623'5	- '08	348'97	1'0	1'704	1'81	
<b>1898</b>	2'6807	- '0001	1989'2	- '10	316'16	1'8	1'128	2'11	
<b>1899</b>	0'1981	- '0001	2351'4	- '07	279'79	364'3	0'523	2'41	
<b>1900</b>	1'2696	...	2717'3	- '01	246'98	365'1	3'471	2'71	
Period	3'5541	...	4332'6	...	398'88	365'3	3'525	3'55	

# SATELLITE II

## Approximate Tables of Conjunction

*I continued*

Epochs of Conjunction

		3	4	5	6	7	8	9	
Ye	Co juncti	Var ation for 100 <sup>d</sup>	$\alpha$	Var ation for 100 <sup>d</sup>	$\beta$	$\gamma$	$\delta$		
<b>1900</b>	1 2696		<sup>d</sup> 717 3	- 01	<sup>d</sup> 246 98	365 1	3 471	<sup>d</sup> 2 71	The constant - 0 <sup>d</sup> 1000 has been applied to each entry in column
<b>1901</b>	2 3414		3 83 4	+ 06	14 17	0 7	895	3 1	
<b>1902</b>	3 4133	+ 001	3449 8	+ 07	181 35	1 5	2 319	3 31	
<b>1903</b>	9311		381 5	+ 03	144 99	364	1 713	0 06	The constant - 0 <sup>d</sup> 080 has been applied to each entry in columns 8 9
<b>*1904</b>	2 0 28		4178 6	- 01	11 18	364 8	1 137	0 36	
<b>1905</b>	0744		1	- 4	79 36	0 3	0 560	0 66	
<b>1906</b>	3 1459		577 8	- 06	46 55	1 2	3 509	0 96	For Eclipses the argument $\gamma$ is not wanted
<b>1907</b>	0 6634		940	- 04	10 19	363 7	2 904	1 5	
<b>1908</b>	1 735		1306 1	- 01	376 26	364 5	2 3 8	1 55	
<b>1909</b>	1 8 67		167	0	343 45		1 751	1 85	Column corrected by the equation from the following tables gives superior conjunctions required for Eclipses and Occultations. To find inferior conjunction for Shadows and Transits add (or subtract) one half the synodic period $e$ 1 <sup>d</sup> 7770 to the numbers of columns 2 4 6 7 8 9
<b>1910</b>	2 8784		38 3	+ 03	310 63	0 9	1 175	15	
<b>1911</b>	396		401 0	+ 04	274 7	363 4	0 569	45	
<b>1912</b>	1 4679		767	+ 03	41 46	364 2	3 518	75	
<b>1913</b>	1 5397		3133 3	+ 01	08 64	365	2 942	3 05	
<b>1914</b>	2 6114		3499 4	03	175 83	0 5	365	3 35	
<b>1915</b>	0 1 89		3861 7	- 6	139 46	363 1	1 760	0 10	
<b>1916</b>	1 4	- 0001	4 7 6	- 07	106 65	363 9	1 184	0 40	
<b>1917</b>	1 719		260 8	- 04	73 84	364 7	0 607	0 70	
<b>1918</b>	3436		6 6 8	+ 01	41 03	0 2	0 031	1 00	
<b>1919</b>	3 4153		993 0	+ 04	8 2	1 1	980	1 30	
<b>1920</b>	0 9331	+ 00 1	1355 7	+ 07	370 73	363 6	374	1 59	
<b>1921</b>	1 0050	+ 00 1	17 2 1	+ 1	337 9	364 4	1 798	1 89	
<b>1922</b>	0771		088 6	00	305 11	365	1 1	19	
<b>1923</b>	3 1484	- 0001	2454 2	- 7	7 30	8	0 645	2 49	
<b>*1924</b>	666	- 0 1	816 7	- 11	35 93	363 3	0 04	79	
<b>1925</b>	0 7371	- 000	318 0	- 20	03 1	364 1	2 989	3 09	
<b>1926</b>	1 8 81	- 000	3547 3	- 0	170 31	364 9	2 41	3 39	
<b>1927</b>	2 8793	- 0001	3912 7	- 14	137 49	4	1 836	0 14	
<b>1928</b>	0 3966		4 74 9	- 03	101 13	363 0	1 231	0 44	
<b>1929</b>	0 4684	+ 0001	308 5	+ 1	68 32	363 8	654	0 74	
<b>1930</b>	1 54 6	+ 000	675 1	+ 18	35 50	364 6	0 078	1 04	
<b>1931</b>	61 9	+ 0002	1041 9	+ 19	69	0 1	3 027	1 34	
<b>*1932</b>	0 1311	+ 0 01	1405 1	+ 18	365 21	362 7	4 1	1 63	
<b>1933</b>	0 033	+ 0001	1771 8	+ 11	332 40	363 5	1 845	1 93	
<b>1934</b>	1 75		138 1	00	299 58	364 3	1 68	23	
<b>1935</b>	2 3467	- 0001	5 3 9	- 11	266 77	365 1	0 692	2 53	
<b>1936</b>	3 4179	- 000	2869 4	- 19	33 96	0 7	0 116	83	
<b>1937</b>	3 4890	- 0002	3234 7	- 21	201 14	1 5	3 065	3 13	
<b>1938</b>	1 0 59	- 0001	3596 4	- 17	164 78	364 0	2 459	3 43	
<b>1939</b>	773	- 0001	3962 1	- 07	131 91	364 8	1 883	0 18	
<b>1940</b>	3 1489		4328 0	+ 04	99 16	0 3	1 306	0 48	
<b>1941</b>	3 2 9	+ 0001	361 9	+ 14	66 34	1 2	0 730	0 78	
<b>1942</b>	0 7390	+ 0001	7 5	+ 15	9 98	363 7	0 125	1 08	
<b>1943</b>	1 8111	+ 0001	1091 6	+ 11	396 05	364 5	3 073	1 38	
<b>*1944</b>	2 8831		1458 0	+ 04	363 4	0	2 497	1 68	
<b>1945</b>	9548		18 4 0	- 03	330 43	0 8	1 9 0	1 98	
<b>1946</b>	0 47	- 0 01	2186 4	- 08	294 6	363 4	1 315	2 8	
<b>1947</b>	1 5436	- 0 1	255	- 10	261 5	364 2	0 739	2 58	
<b>1948</b>	6150	- 0001	2917 8	- 07	28 43	365 0	16	2 88	
<b>1949</b>	6866		3 83 7	- 3	195 62	0 5	3 111	3 18	
<b>1950</b>	0 204		3646 2	+ 04	159 26	363 1	506	3 47	
Pe od	3 5541		4332 6		398 88	365 3	3 5 5	3 55	

# SATELLITE II

## Approximate Tables of Conjunction

*I continued*

Epochs of Conjunction

1	2	3	4	5	6	7	8	9	
Year	Conjunction	Variation for 100 <sup>d</sup>	$\alpha$	Variation for 100 <sup>d</sup>	$\beta$	$\gamma$	$\delta$	$\epsilon$	
<b>1950</b>	<sup>d</sup> 0°2042	...	<sup>d</sup> 3646.2	+ .04	<sup>d</sup> 159°26	<sup>d</sup> 363.1	<sup>d</sup> 2°506	<sup>d</sup> 3°47	<p>The constant <math>-0^d.1000</math> has been applied to each entry in column 2.</p> <p>The constant <math>-0^d.080</math> has been applied to each entry in columns 8, 9.</p> <p>For Eclipses the argument <math>\gamma</math> is not wanted.</p> <p>Column 2 corrected by the equations from the following tables, gives superior conjunction as required for Eclipses and Occultations. To find inferior conjunction for Shadows and Transits, add (or subtract) one half the synodic period, i.e. <math>1^d.7770</math>, to the numbers of columns 2, 4, 6, 7, 8, 9.</p>
<b>1951</b>	1°2761	+ .0001	4012.6	+ .08	126°44	363.9	1°931	0°22	
<b>*1952</b>	2°3481	+ .0001	46.3	+ .10	93°63	364.7	1°353	0°52	
<b>1953</b>	2°4201	+ .0001	412.8	+ .08	60°82	0°2	0°777	0°82	
<b>1954</b>	3°4920	...	779.1	+ .04	28°00	1°1	0°200	1°12	
<b>1955</b>	1°0097	...	1141.7	.00	390°53	363.6	3°120	1°42	
<b>*1956</b>	2°0813	...	1507.7	- .04	357°71	364.4	2°544	1°72	
<b>1957</b>	2°1528	- .0001	1873.6	- .08	324°90	365.2	1°967	2°02	
<b>1958</b>	3°2242	- .0001	2239.2	- .08	292°09	0°7	1°391	2°32	
<b>1959</b>	0°7416	...	2601.5	- .03	255°72	363.3	0°786	2°62	
<b>*1960</b>	1°8133	...	2967.6	+ .03	222°91	364.1	0°209	2°92	
<b>1961</b>	1°8852	...	3333.9	+ .06	190°10	364.9	3°158	3°22	
<b>1962</b>	2°9570	...	3700.2	+ .04	157°29	0°4	2°582	3°51	
<b>1963</b>	0°4747	...	4062.8	.00	120°92	363.0	1°976	0°26	
<b>*1964</b>	1°5463	...	96.2	- .04	88°11	363.8	1°400	0°56	
<b>1965</b>	1°6179	...	462.1	- .06	55°30	364.6	0°823	0°86	
<b>1966</b>	2°6894	...	828.0	- .03	22°48	0°1	0°246	1°16	
<b>1967</b>	0°2070	...	1190.5	- .04	385°00	362.7	3°167	1°46	
<b>*1968</b>	1°2785	...	1556.3	- .03	352°19	363.5	2°591	1°76	
<b>1969</b>	1°3502	...	1922.5	+ .04	319°38	364.3	2°014	2°06	
<b>1970</b>	2°4221	+ .0001	2288.7	+ .06	286°56	365.1	1°438	2°36	
<b>1971</b>	3°4940	...	2655.0	+ .04	253°75	0°6	0°862	2°66	
<b>*1972</b>	1°0117	...	3017.6	+ .03	217°39	363.2	0°256	2°96	
<b>1973</b>	1°0834	...	3383.8	- .01	184°57	364.0	3°205	3°26	
<b>1974</b>	2°1550	- .0001	3749.7	- .07	151°76	364.8	2°629	0°01	
<b>1975</b>	3°2264	- .0001	4115.4	- .07	118°95	0°3	2°052	0°31	
<b>*1976</b>	0°7439	...	145.1	+ .03	82°58	362.9	1°447	0°60	
<b>1977</b>	0°8159	...	511.6	- .04	49°77	363.7	0°870	0°90	
<b>1978</b>	1°8870	- .0001	877.0	- .08	16°96	364.5	0°294	1°20	
<b>1979</b>	2°9588	+ .0001	1243.2	+ .07	383°03	0°0	3°243	1°50	
<b>*1980</b>	0°4767	+ .0001	1606.1	+ .11	346°66	362.5	2°638	1°80	
<b>1981</b>	0°5487	+ .0001	1972.5	+ .10	313°85	363.4	2°061	2°10	
<b>1982</b>	1°6207	...	2338.9	+ .03	281°40	364.2	1°485	2°40	
<b>1983</b>	2°6923	- .0001	2704.9	- .10	248°23	365.0	0°908	2°70	
<b>*1984</b>	0°2094	...	3066.8	- .04	211°86	362.2	0°303	3°00	
<b>1985</b>	0°2814	- .0002	3432.2	- .21	179°05	363.1	3°252	3°30	
<b>1986</b>	1°3515	- .0003	3797.4	- .34	146°24	363.9	2°675	0°05	
<b>1987</b>	2°4227	- .0001	4162.7	- .11	113°42	364.7	2°099	0°35	
<b>*1988</b>	3°4943	...	196.1	.00	80°61	0°2	1°523	0°64	
<b>1989</b>	0°0120	+ .0001	558.8	+ .10	44°25	362.7	0°917	0°94	
<b>1990</b>	1°0841	+ .0002	925.4	+ .18	11°43	363.6	0°341	1°24	
<b>1991</b>	2°1565	+ .0002	1292.3	+ .20	377°50	364.4	3°290	1°54	
<b>*1992</b>	3°2288	+ .0001	1659.0	+ .17	344°69	365.2	2°713	1°84	
<b>1993</b>	3°3009	+ .0001	2025.6	+ .08	311°88	0°7	2°137	2°14	
<b>1994</b>	0°8186	...	2388.2	- .03	275°51	363.3	1°532	2°44	
<b>1995</b>	1°8900	- .0001	2754.0	- .14	242°70	364.1	0°955	2°74	
<b>*1996</b>	2°9611	- .0002	3119.4	- .20	209°89	364.9	0°379	3°04	
<b>1997</b>	3°0322	- .0002	3484.6	- .20	177°08	0°4	3°327	3°34	
<b>1998</b>	0°5492	- .0001	3846.4	- .16	140°71	363.0	2°722	0°09	
<b>1999</b>	1°6206	...	4212.1	- .06	107°90	363.8	2°146	0°39	
<b>*2000</b>	2°6923	...	245.6	.00	75°09	364.6	1°569	0°69	
Period	3°5541	...	4332.6	...	398°88	365.3	3°525	3°55	

# SATELLITE II

## Approximate Tables of Conjunction

II

Motions of the Arguments

Syn Rev	Date	3			4	5	Syn Rev	Date	3			4	5
		$\alpha$	$\beta$	$\gamma$					$\alpha$	$\beta$	$\gamma$		
		d							d				
1	January	3 5541	3 55	0 9	0		53	July	7 3670	188 37	1 517	0 15	
2		7 08	7 11	0 57	0 1		54		10 9 11	191 9	1 546	0 16	
3		1 66 3	10 66	0 086	0 01		55		14 475	195 48	1 575	0 16	
4		14 164	14	0 115	0 01		56		18 0 93	199 03	1 6 3	0 16	
5		17 7705	17 77	0 143	0 1		57		1 5834	2 2 58	1 63	0 17	
6		1 3 46	1 3	0 17	0		58		5 1375	06 14	1 661	0 17	
7		4 8787	4 88	0			59		28 6916	09 69	1 689	0 17	
8		8 43 8	8 43	0 2 9	0 0		60	August	1 457	13 25	1 716	17	
9		31 9868	31 99	258	0 03		61		4 7997	216 80	1 746	0 18	
10	February	4 5409	35 54	0 286	0 03		62		8 3538	220 35	1 775	0 18	
11		8 950	39 1	0 315	0 03		63		11 9079	2 3 91	1 804	0 18	
12		11 6491	4 65	0 344	0 03		64		15 46 0	7 46	1 83	0 19	
13		15 03	46 2	0 37	0 04		65		19 0161	231 0	1 861	19	
14		18 7573	49 76	0 4 1	0 4		66		2 570	34 57	1 890	0 19	
15		3114	53 31	0 4 9	0 4		67		6 1243	38 1	1 918	0 20	
16		25 8655	56 87	458	0 05		68		9 6784	41 68	1 947	0 20	
17	March	1 4196	60 4	0 487	0 05		69	September	2 325	245 3	1 976	0 20	
18		4 9737	63 97	0 515	0 05		70		5 7866	248 79	2 004	0 20	
19		8 5 78	67 53	0 544	0 6		71		9 3407	25 34	0 33	21	
20		1 0819	71 08	0 573	0 6		72		12 8948	255 89	2 061	0 21	
21		15 6360	74 64	0 601	0 6		73		16 4489	59 45	0 90	0 21	
22		19 1901	78 19	0 630	0 06		74		20 0030	63 0	2 119	0 2	
23		7442	81 74	0 659	0 07		75		23 5571	66 56	2 147	0 22	
24		6 983	85 30	0 687	0 07		76		7 111	70 11	2 176	22	
25		9 85 4	88 85	0 716	0 07		77		30 6653	73 67	2 05	0 2	
26	April	4064	9 41	0 744	0 8		78	October	4 2193	77	233	23	
27		5 96 5	95 96	773	0 08		79		7 7734	80 77	26	3	
28		9 5146	99 51	0 80	0 8		80		11 3 75	84 33	2 290	0 3	
29		13 687	103 07	0 830	0 8		81		14 8816	87 88	319	0 4	
30		16 6 28	106 6	0 859	0 9		82		18 4357	291 44	348	0 24	
31		0 1769	11 18	0 888	9		83		1 9898	294 99	376	0 24	
32		3 7310	113 73	0 916	0 09		84		25 5439	98 54	405	0 24	
33		7 85	117 9	945	0 10		85		9 980	302 10	2 434	0 5	
34		30 839	1 84	973	10		86	November	1 6521	305 65	2 462	0 5	
35	May	4 3933	1 4 39	1 0	0 10		87		5 2062	309 1	491	0 25	
36		7 9474	1 7 95	1 031	0 1		88		8 7603	312 76	2 519	0 26	
37		11 5 15	131 50	1 059	0 11		89		1 3144	316 31	548	0 26	
38		15 556	135 06	1 088	0 11		90		15 8685	319 87	577	0 26	
39		18 6 97	138 61	1 117	0 11		91		19 4 6	323 42	2 6 5	0 27	
40		1638	14 16	1 145	0 12		92		2 9767	3 6 98	2 634	0 27	
41		25 7179	145 7	1 174	0 12		93		6 5308	330 53	2 663	0 27	
42		9 7	149 7	1	0 1		94		30 0849	334 08	2 691	0 7	
43	June	1 8 60	15 83	1 31	0 13		95	December	3 6389	337 64	2 72	0 8	
44		5 3801	156 38	1 260	0 13		96		7 1930	341 19	2 749	0 28	
45		8 934	159 93	1 88	0 13		97		10 7471	344 75	777	0 28	
46		1 4883	163 49	1 317	0 13		98		14 301	348 30	2 8 6	0 29	
47		16 04 4	167 4	1 346	0 14		99		17 8553	351 86	2 834	0 29	
48		19 5965	170 60	1 374	0 14		100		1 4 94	355 41	863	0 29	
49		23 1506	174 15	1 4 3	14		101		24 9635	358 96	2 89	0 9	
50		6 7047	177 7	1 43	0 15		102		8 5176	362 52	920	0 30	
51		30 588	181 6	1 46	0 15		103		32 0717	366 07	2 949	0 3	
52	July	3 8129	184 81	1 489	15								

I L p Y d m i n i t h d t i C l u m b y f t F b 8



# SATELLITE II

## Approximate Tables of Conjunction

III			Equation of Conjunction			Argument . <i>a</i>			Ec., Oc., Sh., Tr.					
1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
<i>a</i>	Equation	$\Delta_{10^4}$	<i>a</i>	Equation	$\Delta_{10^4}$	<i>a</i>	Equation	$\Delta_{10^4}$	<i>a</i>	Equation	$\Delta_{10^4}$	<i>a</i>	Equation	$\Delta_{10^4}$
<sup>d</sup> 0	<sup>d</sup> 0°0800	+8,5	<sup>d</sup> 1000	<sup>d</sup> 0°1346	+0,3	<sup>d</sup> 2000	<sup>d</sup> 0°0923	-7,3	<sup>d</sup> 3000	<sup>d</sup> 0°0301	-3,0	<sup>d</sup> 4000	<sup>d</sup> 0°0533	+7,3
20	817	8,5	1020	1346	+0,3	2020	908	7,5	3020	295	3,0	4020	548	7,5
40	834	8,3	1040	1347	0,0	2040	893	7,3	3040	289	3,0	4040	563	7,5
60	850	8,3	1060	1346	-0,3	2060	879	7,3	3060	283	2,8	4060	578	7,8
80	867	8,5	1080	1346	0,3	2080	864	7,5	3080	278	2,3	4080	594	7,8
100	884	8,3	1100	1345	0,8	2100	849	7,5	3100	274	2,0	4100	609	7,8
120	0°0900	+8,3	1120	0°1343	-1,0	2120	0°0834	-7,3	3120	0°0270	-2,0	4120	0°0625	+8,0
140	917	8,3	1140	1341	1,0	2140	820	7,3	3140	266	1,8	4140	641	8,0
160	933	8,0	1160	1339	1,3	2160	805	7,5	3160	263	1,5	4160	657	8,0
180	949	8,0	1180	1336	1,5	2180	790	7,5	3180	260	1,3	4180	673	8,3
200	965	8,0	1200	1333	1,8	2200	775	7,5	3200	258	1,0	4200	690	8,3
220	0°0981	+8,0	1220	0°1329	-2,0	2220	0°0760	-7,5	3220	0°0256	-0,8	4220	0°0706	+8,3
240	997	7,8	1240	1325	2,3	2240	745	7,5	3240	255	0,5	4240	723	8,3
260	1012	7,5	1260	1320	2,5	2260	730	7,3	3260	254	0,5	4260	739	8,3
280	1027	7,5	1280	1315	2,8	2280	716	7,3	3280	253	-0,3	4280	756	8,5
300	1042	7,5	1300	1309	3,0	2300	701	7,5	3300	253	+0,3	4300	773	8,3
320	0°1057	+7,5	1320	0°1303	-3,0	2320	0°0686	-7,3	3320	0°0254	+0,5	4320	0°0789	+8,3
340	1072	7,3	1340	1297	3,3	2340	672	7,0	3340	255	0,5	4340	806	8,5
360	1086	7,0	1360	1290	3,5	2360	658	7,3	3360	256	0,8	4360	823	8,5
380	1100	7,0	1380	1283	3,5	2380	643	7,3	3380	258	1,0	4380	840	8,3
400	1114	7,0	1400	1276	3,8	2400	629	7,0	3400	260	1,3	4400	856	8,3
420	0°1128	+6,8	1420	0°1268	-4,0	2420	0°0615	-7,0	3420	0°0263	+1,5	4420	0°0873	+8,5
440	1141	6,5	1440	1260	4,3	2440	601	7,0	3440	266	1,8	4440	890	8,3
460	1154	6,3	1460	1251	4,5	2460	587	7,0	3460	270	2,0	4460	906	8,3
480	1166	6,0	1480	1242	4,5	2480	573	6,8	3480	274	2,3	4480	923	8,3
500	1178	6,0	1500	1233	4,5	2500	560	6,8	3500	279	2,5	4500	939	8,0
520	0°1190	+5,8	1520	0°1224	-4,8	2520	0°0546	-6,8	3520	0°0284	+2,8	4520	0°0955	+8,0
540	1201	5,5	1540	1214	5,0	2540	533	6,5	3540	290	3,0	4540	971	8,0
560	1212	5,5	1560	1204	5,0	2560	520	6,5	3560	296	3,0	4560	987	7,8
580	1223	5,5	1580	1194	5,3	2580	507	6,3	3580	302	3,3	4580	1002	7,8
600	1233	5,0	1600	1183	5,5	2600	495	6,3	3600	309	3,8	4600	1018	7,8
620	0°1243	+5,0	1620	0°1172	-5,5	2620	0°0482	-6,3	3620	0°0317	+4,0	4620	0°1033	+7,5
640	1253	4,8	1640	1161	5,8	2640	470	6,0	3640	325	4,0	4640	1048	7,5
660	1263	4,3	1660	1149	6,0	2660	458	6,0	3660	333	4,3	4660	1063	7,3
680	1270	4,0	1680	1137	6,0	2680	446	5,8	3680	342	4,5	4680	1077	7,3
700	1278	4,0	1700	1125	6,0	2700	435	5,5	3700	351	4,5	4700	1092	7,3
720	0°1286	+3,8	1720	0°1113	-6,0	2720	0°0424	-5,5	3720	0°0360	+4,8	4720	0°1106	+6,8
740	1293	3,5	1740	1101	6,3	2740	413	5,5	3740	370	5,3	4740	1119	6,8
760	1300	3,3	1760	1088	6,5	2760	402	5,3	3760	381	5,5	4760	1133	6,3
780	1306	3,0	1780	1075	6,5	2780	392	5,0	3780	392	5,5	4780	1146	6,3
800	1312	3,0	1800	1062	6,5	2800	382	5,0	3800	403	5,5	4800	1158	6,3
820	0°1318	+2,8	1820	0°1049	-6,8	2820	0°0372	-4,8	3820	0°0414	+5,8	4820	0°1171	+6,3
840	1323	2,3	1840	1035	6,8	2840	363	4,5	3840	426	6,0	4840	1183	5,8
860	1327	2,0	1860	1022	6,8	2860	354	4,5	3860	438	6,3	4860	1194	5,5
880	1331	2,0	1880	1008	7,0	2880	345	4,3	3880	451	6,5	4880	1205	5,5
900	1335	1,8	1900	994	7,0	2900	337	4,0	3900	464	6,5	4900	1216	5,5
920	0°1338	+1,5	1920	0°0980	-7,0	2920	0°0329	-4,0	3920	0°0477	+6,8	4920	0°1227	+5,3
940	1341	1,3	1940	966	7,0	2940	321	3,8	3940	491	7,0	4940	1237	5,0
960	1343	1,0	1960	952	7,3	2960	314	3,5	3960	505	7,0	4960	1247	4,8
980	1345	0,8	1980	937	7,3	2980	307	3,3	3980	519	7,0	4980	1256	4,5
1000	0°1346	+0,3	2000	0°0923	-7,3	3000	0°0301	-3,0	4000	0°0533	+7,3	5000	0°1266	+4,5

Added Constant:  $+0^d.0800$ .

The Equation of this Table to be applied to the entries in Columns 2, 8, 9 of Table I.

# SATELLITE II

## Approximate Tables of Conjunction

IV      Equation of Geocentric Conjunction      Argument  $\beta$       Oc, Tr

$\beta$	Equation	$\Delta_1$	$\beta$	Equation	$\Delta_1$	$\beta$	Equation	$\Delta_d$	$\beta$	Equation	$\Delta_d$
0	-0030	-10	100	-01373	+33	200	-0092	+145	300	+00776	+30
2	34	13	102	1366	35	202	63	143	302	78	5
4	385	13	104	1359	40	204	35	143	304	786	18
6	47	10	106	1350	45	206	06	145	306	789	13
8	469	08	108	1341	50	208	177	143	308	791	08
10	51	8	110	133	55	210	149	143	310	79	+03
12	-00552	-09	112	-01319	+58	212	-010	+145	312	+0079	-03
14	593	03	114	1307	63	214	91	143	314	791	08
16	633	198	116	94	68	216	63	140	316	789	13
18	672	195	118	18	7	218	35	14	318	786	18
20	711	195	120	1266	73	220	-0007	140	320	78	5
22	-00750	-190	122	-01251	+78	222	+0001	+138	322	+00776	-33
24	787	185	124	135	8	224	48	138	324	769	35
26	824	183	126	119	85	226	76	138	326	76	4
28	86	178	128	101	90	228	103	135	328	753	50
30	895	173	130	1183	90	230	130	135	330	74	55
32	-00929	-165	132	-01165	+93	232	+00157	+135	332	+00731	-60
34	961	16	134	1146	98	234	184	133	334	718	68
36	993	158	136	116	103	236	210	130	336	704	73
38	104	15	138	115	105	238	236	130	338	689	80
40	153	145	140	1084	105	240	6	128	340	672	88
42	-01082	-14	142	-0163	+18	242	+0287	+15	342	+00654	-93
44	1109	133	144	1041	113	244	31	125	344	635	98
46	1135	128	146	118	115	246	337	13	346	615	15
48	116	10	148	995	118	248	361	118	348	593	113
50	1183	113	150	971	10	250	384	119	350	57	118
52	-105	-108	152	-00947	+120	252	+00408	+118	352	+00546	-13
54	126	103	154	93	13	254	431	113	354	51	130
56	146	95	156	898	15	256	453	110	356	494	138
58	164	90	158	873	18	258	475	108	358	466	143
60	1282	83	160	847	130	260	496	105	360	437	148
62	-01297	-75	162	-0081	+130	262	+00517	+103	362	+00407	-153
64	1312	7	164	795	130	264	537	98	364	376	160
66	135	63	166	769	133	266	556	95	366	343	165
68	1337	58	168	742	135	268	575	93	368	310	170
70	1348	53	170	715	138	270	593	90	370	275	175
72	-01358	-45	172	-00687	+138	272	+00611	+88	372	+00240	-178
74	1366	38	174	66	135	274	68	83	374	04	183
76	1373	33	176	633	138	276	644	80	376	167	188
78	1379	8	178	605	14	278	660	75	378	129	193
80	384	3	180	577	140	280	674	70	380	90	198
82	-1388	-18	182	-00549	+140	282	+00688	+7	382	+0050	-00
84	391	1	184	51	14	284	7	65	384	+0001	03
86	139	5	186	493	143	286	714	58	386	-00031	205
88	1393		188	464	143	288	75	55	388	7	208
90	139	+08	190	436	143	290	736	53	390	113	10
92	-01390	+13	192	-00407	+145	292	+746	+48	392	-00155	-210
94	1387	15	194	378	145	294	755	43	394	197	210
96	384	0	196	349	143	296	763	38	396	39	210
98	1379	8	198	31	143	298	770	33	398	81	210
100	-1373	+33	200	-009	+145	300	+00776	+30	400	-00323	-0

Appl lC t t oo Th Eq ti fT bl IV t l by th fT bl V VI gl th A lP ll p h l h m t b ppl d f  
O ult ti dT t t th t fth Cl m 8 g fT bl I d l g m t fT bl LXVI f mp ti g th ff t fJ pit ph

# SATELLITE II

## Approximate Tables of Conjunction

V		Equation of Geocentric Conjunction										Arguments $\alpha, \beta$						Oc., Tr.				
$\alpha$	$\beta$	0 <sup>d</sup>	10 <sup>d</sup>	20 <sup>d</sup>	30 <sup>d</sup>	40 <sup>d</sup>	50 <sup>d</sup>	60 <sup>d</sup>	70 <sup>d</sup>	80 <sup>d</sup>	90 <sup>d</sup>	100 <sup>d</sup>	110 <sup>d</sup>	120 <sup>d</sup>	130 <sup>d</sup>	140 <sup>d</sup>	150 <sup>d</sup>	160 <sup>d</sup>	170 <sup>d</sup>	180 <sup>d</sup>	190 <sup>d</sup>	200 <sup>d</sup>
0	0	200	188	176	166	157	150	145	142	141	143	146	150	155	161	168	174	180	185	190	195	200
100		218	206	193	181	170	161	153	148	144	143	143	146	149	153	158	163	169	174	178	183	188
200		236	223	210	197	184	173	163	155	148	144	142	142	144	146	150	154	158	162	167	171	176
300		252	240	227	213	199	185	173	162	154	147	142	140	139	140	142	145	148	152	156	160	165
400		268	256	243	229	213	198	184	171	160	151	144	139	136	135	136	137	140	143	146	150	154
500		282	272	259	244	228	211	195	180	167	155	146	139	134	132	131	131	133	135	137	140	144
600		295	286	273	258	241	224	206	190	174	161	150	141	134	130	127	126	126	128	130	132	135
700		306	297	285	271	254	236	218	200	183	167	154	143	135	129	125	123	122	123	124	126	128
800		314	307	296	282	266	248	228	209	191	175	160	147	138	130	125	121	120	119	119	121	122
900		320	315	305	292	276	258	239	219	200	182	166	153	141	132	126	121	119	117	117	117	118
1000		323	320	312	310	285	267	248	228	209	190	173	159	146	136	129	123	119	117	116	115	116
1100		324	322	316	305	292	275	256	237	217	199	181	165	152	141	133	126	122	119	117	116	115
1200		323	323	318	309	297	281	263	245	226	207	189	173	159	148	139	131	125	122	119	117	116
1300		318	320	317	310	299	286	269	252	233	215	198	181	167	155	145	138	131	127	124	121	119
1400		311	315	314	309	300	288	274	257	240	223	206	190	176	164	154	145	138	133	129	126	124
1500		302	307	308	306	299	289	277	262	246	230	214	199	185	173	162	154	147	141	137	133	130
1600		291	298	301	300	296	288	278	265	252	237	222	208	194	183	172	163	156	150	145	141	138
1700		278	286	291	292	290	285	277	267	256	243	230	217	204	193	183	174	166	160	155	151	147
1800		263	272	279	283	283	281	276	268	259	248	237	225	214	203	194	185	177	171	166	161	157
1900		247	257	266	271	274	274	272	267	260	252	243	233	223	213	204	196	189	183	177	172	168
2000		230	241	251	258	264	266	267	265	261	255	248	240	231	223	215	208	201	195	189	184	179
2100		212	224	235	244	252	257	260	261	260	257	252	246	240	233	226	219	212	207	202	196	191
2200		194	206	218	229	239	246	252	256	258	257	255	252	247	242	236	230	224	219	214	209	204
2300		176	188	201	213	225	235	244	250	254	257	257	256	253	249	245	240	235	230	226	221	216
2400		159	171	184	198	211	223	234	243	250	255	258	259	258	256	253	249	245	241	237	232	228
2500		142	154	167	182	196	210	223	235	245	252	257	261	262	262	260	258	255	251	247	243	239
2600		127	138	151	166	182	197	212	226	238	248	256	261	265	266	266	265	263	260	257	253	250
2700		113	123	136	151	168	184	201	217	231	243	253	261	266	269	271	271	270	268	265	262	259
2800		101	110	123	138	154	172	190	207	223	237	249	259	266	271	274	275	275	274	272	270	267
2900		91	99	111	125	142	160	179	197	215	230	244	256	264	271	275	278	279	279	278	276	274
3000		84	90	100	114	131	149	168	187	206	223	238	251	261	269	275	279	281	282	282	281	279
3100		78	83	92	105	121	139	158	178	197	215	231	246	257	266	273	278	282	283	284	284	283
3200		76	79	87	98	113	130	149	169	188	207	224	239	252	262	270	276	280	283	284	285	285
3300		76	77	83	93	107	123	141	160	180	199	216	232	245	257	265	272	277	280	283	284	285
3400		79	78	82	90	102	117	134	153	172	190	208	224	238	250	259	267	273	277	280	282	283
3500		84	81	84	90	100	113	129	146	164	182	200	216	230	242	252	260	267	271	275	278	280
3600		91	87	87	92	100	111	125	141	158	175	191	207	221	233	244	252	259	264	268	272	274
3700		101	96	94	96	102	111	123	137	152	168	183	198	212	224	234	243	250	256	261	265	268
3800		113	106	102	102	106	113	122	134	147	161	175	189	202	214	224	233	241	247	252	256	259
3900		127	119	113	111	112	116	123	132	143	155	168	181	192	204	214	222	230	236	241	246	250
4000		142	138	125	121	120	121	126	132	141	151	161	172	183	193	203	211	219	225	230	235	240
4100		159	148	139	133	129	128	130	133	139	147	156	165	174	183	192	200	207	213	219	224	228
4200		176	165	154	146	140	136	135	136	139	144	151	158	166	173	181	188	195	201	207	212	217
4300		194	182	171	161	152	146	142	140	141	143	147	152	158	164	171	177	184	189	194	199	204
4400		212	200	188	176	166	157	150	146	143	143	144	147	151	156	162	166	172	177	182	187	192
4500		230	218	205	192	180	169	159	152	147	144	143	143	145	148	152	157	161	166	171	175	180

The unit in this Table equals 0<sup>d</sup>·0001.

Added Constant: +0<sup>d</sup>·0200.

The sign is positive.

The Equation of this Table to be added to that of Table IV.

# SATELLITE II

## Approximate Tables of Conjunction

*V continued*

Equation of Geocentric Conjunction

Arguments  $\alpha \beta$

Oc, Tr

$\beta$ $\alpha$	200 <sup>l</sup> 210 <sup>d</sup> 220 <sup>l</sup>	230 <sup>l</sup> 240 <sup>l</sup> 250 <sup>l</sup>	260 <sup>l</sup> 270 <sup>l</sup> 280 <sup>l</sup>	290 <sup>d</sup> 300 <sup>l</sup> 310 <sup>l</sup>	320 <sup>d</sup> 330 <sup>l</sup> 340 <sup>d</sup>	350 <sup>d</sup> 360 <sup>l</sup> 370 <sup>d</sup>	380 <sup>l</sup> 390 <sup>l</sup> 400 <sup>l</sup>
0	05 1	215 1 7	33 39 245	50 255 257	59 58 255	50 24 233	2 3 211 199
100	188 193 198	203 1 16	2 3 30 38	45 51 57	61 63 263	6 255 248	239 2 8 217
200	176 181 186	191 198 5	13 1 30	39 247 255	61 66 69	269 67 6	255 245 234
300	165 169 174	18 186 193	211 1	231 4 52	61 68 274	277 277 75	69 61 251
400	154 158 163	168 175 18	191 2 1 1	24 36 248	59 69 277	283 286 286	83 76 267
500	144 48 152	158 164 171	18 191 02	15 29 43	56 68 79	87 93 295	294 289 281
600	135 39 143	148 154 161	17 181 193	206 21 236	252 266 79	290 298 303	304 301 94
700	1 8 131 134	139 145 15	161 171 184	198 13 30	46 262 77	91 301 308	311 310 305
800	12 1 5 1 7	131 137 143	15 16 175	189 05 2	240 58 274	89 302 311	316 317 314
900	118 1 0 122	1 5 13 136	144 154 166	180 197 14	233 52 70	286 300 311	318 3 1 32
1000	1 6 117 18	121 1 5 13	137 147 158	17 188 06	5 44 63	81 297 309	318 323 323
1100	115 1 5 1 6	118 1 1 1 6	13 141 15	165 18 198	217 36 56	75 91 305	316 322 3 4
1200	116 116 116	1 7 119 3	1 8 136 146	158 173 189	08 227 47	66 284 299	311 319 323
1300	119 118 117	118 119 1	1 6 13 141	15 166 181	199 18 38	257 275 91	304 313 319
1400	1 4 1 1 1	1 0 120 1 2	125 130 138	147 159 174	190 208 7	246 64 81	94 305 312
1500	13 1 8 1 6	1 4 1 4 124	1 6 130 135	143 154 167	182 198 216	234 52 268	283 295 303
1600	38 135 13	13 128 1 8	1 8 131 135	141 149 160	173 188 05	2 2 239 255	270 283 92
1700	147 143 140	137 135 133	132 133 135	139 146 155	166 178 193	09 5 240	255 68 79
1800	157 153 149	146 142 39	137 37 137	139 144 150	159 169 18	195 210 225	39 253 64
1900	168 163 159	155 151 147	44 142 14	140 14 146	15 161 171	18 195 209	223 236 48
2000	179 175 17	166 161 156	15 148 145	143 143 144	147 153 161	170 181 193	206 19 31
2100	191 87 18	177 17 166	161 155 151	147 144 143	143 146 151	158 167 177	189 01 213
2200	4 199 194	189 193 177	170 164 157	151 146 143	141 140 143	147 153 16	17 183 195
2300	16 211 6	2 1 194 188	180 173 165	157 150 144	139 136 135	137 141 147	155 166 177
2400	28 2 3 18	213 6 199	191 18 173	164 155 146	139 133 1 9	128 1 9 133	140 149 160
2500	239 35 30	4 18 1	2 192 18	171 16 150	140 131 125	1 1 120 1 1	126 134 143
2600	50 46 241	35 29 2	13 203 191	179 167 154	14 131 1	115 111 111	113 119 128
2700	59 55 25	246 40 32	23 13 01	188 174 159	145 132 121	11 105 10	103 107 114
2800	67 64 60	55 249 4	233 223 10	196 181 166	150 135 121	11 101 95	94 96 10
2900	74 27 68	264 58 51	243 3 0	05 189 173	156 139 123	110 99 91	87 88 92
3000	279 77 75	71 266 259	51 41 28	214 198 180	16 144 1 7	112 99 90	83 82 84
3100	83 8 8	77 7 66	258 49 37	06 188	170 151 13	115 101 89	81 78 79
3200	85 284 83	28 77 27	265 255 244	3 14 197	178 158 139	1 1 105 92	82 77 76
3300	85 85 284	8 80 75	69 261 251	38 2 05	186 167 147	128 111 97	86 79 76
3400	83 84 84	83 81 78	73 65 56	44 230 213	195 176 156	137 119 104	91 83 78
3500	8 281 8	8 81 279	74 269 60	250 236 2 1	204 185 166	147 129 113	99 89 83
3600	74 76 78	79 79 78	75 70 263	254 43 9	13 195 177	158 140 1 3	109 98 91
3700	68 7 72	74 75 75	73 20 65	58 48 35	1 205 188	170 15 136	1 1 109 10
3800	59 63 66	268 7 271	7 69 65	60 5 4	2 9 15 199	183 166 150	135 1 112
3900	250 54 57	60 63 265	66 66 64	61 55 47	37 2 5 211	196 180 165	15 137 126
4000	40 44 48	251 55 58	6 6 6	61 57 51	244 234 2	09 195 18	166 153 141
4100	8 33 37	4 246 25	54 57 58	59 58 255	49 242 33	222 10 196	183 170 158
4200	17 21 6	231 236 241	245 50 53	56 257 57	54 25 43	34 224 21	00 187 175
4300	204 2 9 14	19 5 30	36 4 47	5 55 57	58 56 52	246 38 8	217 05 193
4400	19 197 0	07 13 20	6 33 40	247 253 57	60 61 260	257 51 43	34 2 3 211
4500	180 185 190	195 202 9	216 4 33	241 249 256	61 265 67	266 263 258	50 4 29

Tl ti th T bl i l oo

Add dC t t + oo

Th ig i p iti

Tl q ti f tli T bl t b ld dt th t f l bl IV

# SATELLITE II

## Approximate Tables of Conjunction

VI      Equation of Geocentric Conjunction      Arguments  $\beta, \gamma$       Oc., Tr.

$\beta$ $\gamma$	0 <sup>d</sup>	20 <sup>d</sup>	40 <sup>d</sup>	60 <sup>d</sup>	80 <sup>d</sup>	100 <sup>d</sup>	120 <sup>d</sup>	140 <sup>d</sup>	160 <sup>d</sup>	180 <sup>d</sup>	200 <sup>d</sup>	220 <sup>d</sup>	240 <sup>d</sup>	260 <sup>d</sup>	280 <sup>d</sup>	300 <sup>d</sup>	320 <sup>d</sup>	340 <sup>d</sup>	360 <sup>d</sup>	380 <sup>d</sup>	400 <sup>d</sup>
0 <sup>d</sup>	100	108	115	119	120	119	115	111	107	103	100	96	93	88	84	81	80	81	85	92	100
20	85	94	103	111	117	120	120	119	116	113	110	107	102	97	91	84	79	75	75	79	85
40	72	80	91	102	112	119	123	124	123	122	119	116	112	106	99	89	80	72	68	68	72
60	62	69	80	93	105	116	123	127	128	128	126	124	120	114	106	96	84	73	64	60	62
80	56	61	71	84	98	111	120	126	129	130	130	129	126	121	113	103	90	76	65	58	57
100	56	58	66	78	91	104	115	122	127	129	130	130	129	125	119	109	97	83	70	60	56
120	61	60	64	74	85	97	108	116	121	125	127	128	128	127	122	115	104	91	78	67	61
140	70	66	67	73	81	91	100	108	114	118	121	123	124	125	123	118	111	100	89	78	70
160	83	77	74	75	79	85	92	99	104	108	112	115	118	120	121	120	116	110	101	91	83
180	98	90	84	80	79	82	85	90	94	98	101	105	109	113	116	119	120	118	113	106	98
200	113	104	95	88	82	80	80	82	85	88	91	95	99	104	110	116	121	124	124	120	113
220	127	118	108	97	87	81	77	76	77	79	82	85	89	95	102	111	120	127	131	131	126
240	137	130	119	106	94	84	77	74	72	73	75	77	81	86	95	105	117	127	136	139	137
260	143	138	128	115	101	89	80	74	71	70	70	72	75	79	87	98	111	124	136	142	143
280	144	142	134	122	108	95	84	77	73	70	70	70	71	75	82	92	104	118	131	141	144
300	140	141	136	126	114	102	91	83	78	74	72	71	71	73	78	86	97	110	123	134	140
320	131	135	133	127	118	108	99	91	85	81	78	76	75	75	77	82	90	101	113	124	131
340	119	125	127	125	121	114	107	100	95	90	87	84	81	79	79	80	84	92	101	111	119
360	104	112	118	121	121	118	114	109	105	101	97	94	90	86	83	81	80	83	89	96	104
380	89	98	106	113	118	120	119	117	114	111	108	104	100	95	89	83	79	77	78	82	89
400	75	84	94	105	114	119	122	123	122	120	117	114	110	104	97	88	79	73	69	70	75

The unit in this Table equals 0<sup>d</sup>.0000.

Added Constant : 0<sup>d</sup>.0000.

The sign is positive.

The Equation of this Table to be added to that of Table IV.

# SATELLITE II

## Approximate Tables of Conjunction

VII

Equations of Conjunction

VIII

$\delta$	Equation	$\Delta$
<b>00</b>	<sup>d</sup> 00150	- 19
<b>1</b>	131	19
<b>2</b>	13	18
<b>3</b>	96	16
<b>4</b>	81	14
<b>5</b>	68	1
<b>06</b>	00057	- 9
<b>7</b>	50	6
<b>8</b>	45	3
<b>9</b>	44	+ 1
<b>10</b>	46	4
<b>11</b>	0005	+ 8
<b>2</b>	61	10
<b>3</b>	72	13
<b>4</b>	86	15
<b>5</b>	102	17
<b>16</b>	00120	+ 18
<b>7</b>	138	19
<b>8</b>	157	19
<b>9</b>	176	16
<b>20</b>	193	17
<b>21</b>	00210	+ 16
<b>2</b>	225	14
<b>3</b>	37	11
<b>4</b>	46	8
<b>5</b>	53	5
<b>26</b>	00256	+ 1
<b>7</b>	255	-
<b>8</b>	52	5
<b>9</b>	245	9
<b>30</b>	235	11
<b>31</b>	00223	- 14
<b>2</b>	08	16
<b>3</b>	191	18
<b>4</b>	173	18
<b>5</b>	155	19
<b>36</b>	00136	- 19
<b>7</b>	118	18
<b>8</b>	100	17
<b>9</b>	84	15
<b>40</b>	71	13
<b>41</b>	0059	- 10
<b>2</b>	51	7
<b>3</b>	46	4
<b>4</b>	44	- 1
<b>5</b>	45	+ 3
<b>46</b>	00050	+ 7
<b>7</b>	58	10
<b>8</b>	69	12
<b>9</b>	8	15
<b>50</b>	00098	+ 17

Ec, Oc, Sh, Tr

	Equation
<b>00</b>	<sup>d</sup> 0 050
<b>1</b>	51
<b>2</b>	53
<b>3</b>	54
<b>4</b>	54
<b>5</b>	54
<b>06</b>	00053
<b>7</b>	5
<b>8</b>	51
<b>9</b>	50
<b>10</b>	48
<b>11</b>	00047
<b>2</b>	46
<b>3</b>	46
<b>4</b>	46
<b>5</b>	47
<b>16</b>	00048
<b>7</b>	49
<b>8</b>	50
<b>9</b>	52
<b>20</b>	53
<b>21</b>	00 54
<b>2</b>	54
<b>3</b>	54
<b>4</b>	53
<b>5</b>	5
<b>26</b>	00051
<b>7</b>	50
<b>8</b>	48
<b>9</b>	47
<b>30</b>	46
<b>31</b>	00046
<b>2</b>	46
<b>3</b>	47
<b>4</b>	48
<b>5</b>	49
<b>36</b>	00051
<b>7</b>	52
<b>8</b>	53
<b>9</b>	54
<b>40</b>	54
<b>41</b>	00054
<b>2</b>	52
<b>3</b>	53
<b>4</b>	51
<b>5</b>	49
<b>46</b>	00048
<b>7</b>	47
<b>8</b>	46
<b>9</b>	46
<b>50</b>	00046

Add dC t t + s

Th Eq ti fT bl VII VIII t b dd dt th tI fT bl I Cl m

Add dC t t + 005



# SATELLITE II

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## Tables

of

Longitude on Jupiter's Orbit,  
Variation of the Radius Vector,  
and Latitude



# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

IX Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Date	Mean Long.	A	B	C	D	E	F	G	H	I	J	K	L
1850.0	272°34315	d 5°61104	d 1°64	d 0°12	d 2°147	d 0°5911	d 0°247	d 223°78	d 451°85	d 205°04	d 253°48	d 1°34	d 2°03
1851.0	194°13116	3°96283	1°24	2°34	1°206	3°3459	3°020	187°62	359°18	87°74	132°89	0°12	3°18
*1852.0	115°91917	2°31462	0°84	1°00	0°264	2°5493	2°242	151°46	266°50	452°74	12°30	0°66	0°84
1853.0	139°08194	1°66641	1°45	0°65	0°322	2°7528	2°463	116°31	174°83	336°44	378°30	0°44	2°99
1854.0	60°86995	0°01819	1°05	2°87	2°934	1°9562	1°685	80°15	82°15	219°14	257°71	0°98	0°65
1855.0	342°65796	5°42091	0°65	1°53	1°992	1°1596	0°906	43°99	447°15	101°83	137°12	1°53	1°81
*1856.0	264°44597	3°77270	0°26	0°18	1°050	0°3630	0°128	7°84	354°48	466°83	16°53	0°31	2°96
1857.0	287°60875	3°12449	0°86	3°40	1°109	0°5664	0°350	373°84	262°80	350°53	382°53	0°08	1°62
1858.0	209°39676	1°47628	0°46	2°06	0°167	3°3212	3°123	337°68	170°13	233°23	261°95	0°63	2°77
1859.0	131°18477	6°87900	0°07	0°71	2°779	2°5246	2°344	301°52	77°45	115°93	141°35	1°17	0°43
*1860.0	52°97278	5°23078	4°18	2°92	1°837	1°7280	1°566	265°37	442°45	480°93	20°76	1°71	1°58
1861.0	76°13555	4°58257	0°27	2°59	1°895	1°9314	1°788	230°21	350°78	364°63	386°76	1°49	0°24
1862.0	357°92356	2°93436	4°39	1°24	0°954	1°1348	1°009	194°05	258°10	247°33	266°17	0°27	1°39
1863.0	279°71157	1°28615	3°99	3°46	0°012	0°3382	0°231	157°89	165°43	130°02	145°58	0°81	2°54
*1864.0	201°49958	6°68887	3°59	2°12	2°623	3°0930	3°004	121°74	72°75	12°72	24°99	1°36	0°20
1865.0	224°66235	6°04066	4°20	1°78	2°682	3°2964	3°225	86°58	438°75	378°72	390°99	1°13	2°36
1866.0	146°45036	4°39245	3°80	0°43	1°740	2°4998	2°447	50°42	346°08	261°42	270°40	1°68	0°01
1867.0	68°23837	2°74424	3°40	2°65	0°799	1°7033	1°669	14°27	253°40	144°12	149°81	0°46	1°17
*1868.0	350°02638	1°09603	3°01	1°30	3°410	0°9067	0°890	379°27	160°73	26°82	29°22	1°00	2°32
1869.0	13°18915	0°44782	3°61	0°96	3°468	1°1101	1°112	344°11	69°06	392°82	395°22	0°78	0°98
1870.0	294°97716	5°85053	3°21	3°18	2°527	0°3135	0°334	307°95	434°06	275°51	274°63	1°32	2°13
1871.0	216°76517	4°20232	2°82	1°83	1°585	3°0683	3°106	271°80	341°38	158°21	154°04	0°10	3°28
*1872.0	138°55319	2°55411	2°42	0°49	0°644	2°2717	2°328	235°64	248°71	40°91	33°45	0°64	0°94
1873.0	161°71596	1°90590	3°02	0°15	0°702	2°4751	2°550	200°48	157°03	406°91	399°45	0°42	3°09
1874.0	83°50397	0°25769	2°63	2°36	3°313	1°6785	1°771	164°33	64°36	289°61	278°86	0°97	0°75
1875.0	5°29198	5°66041	2°23	1°02	2°372	0°8819	0°993	128°17	429°36	172°31	158°27	1°51	1°91
*1876.0	287°07999	4°01219	1°83	3°24	1°430	0°0853	0°215	92°01	336°68	55°00	37°68	0°29	3°06
1877.0	310°24276	3°36398	2°44	2°89	1°488	0°2887	0°436	56°85	245°01	421°00	403°68	0°06	1°72
1878.0	232°03077	1°71577	2°04	1°55	0°547	3°0435	3°209	20°70	152°33	303°70	283°09	0°61	2°87
1879.0	153°81878	0°06756	1°64	0°21	3°158	2°2469	2°431	385°70	59°66	186°40	162°51	1°15	0°53
*1880.0	75°60679	5°47028	1°25	2°42	2°216	1°4504	1°652	349°54	424°66	69°10	41°92	1°70	1°68
1881.0	98°76956	4°82207	1°85	2°08	2°275	1°6538	1°874	314°38	332°98	435°10	407°92	1°47	0°34
1882.0	20°55757	3°17386	1°45	0°74	1°333	0°8572	1°096	278°23	240°31	317°80	287°33	0°25	1°49
1883.0	302°34558	1°52565	1°05	2°95	0°392	0°0606	0°317	242°07	147°63	200°49	166°74	0°80	2°64
*1884.0	224°13359	6°92836	0°66	1°61	3°003	2°8154	3°090	205°91	54°96	83°19	46°15	1°34	0°30
1885.0	247°29637	6°28015	1°26	1°27	3°061	3°0188	3°312	170°76	420°96	449°19	412°15	1°12	2°46
1886.0	169°08438	4°63194	0°86	3°48	2°120	2°2222	2°534	134°60	328°28	331°89	291°56	1°66	0°11
1887.0	90°87239	2°98373	0°47	2°14	1°178	1°4256	1°755	98°44	235°61	214°59	170°97	0°44	1°27
*1888.0	12°66040	1°33552	0°07	0°80	0°237	0°6290	0°977	62°29	142°93	97°29	50°38	0°98	2°42
1889.0	35°82317	0°68731	0°67	0°46	0°295	0°8324	1°198	27°13	51°26	463°29	416°38	0°76	1°08
1890.0	317°61118	6°09003	0°28	2°67	2°906	0°0358	0°420	392°13	416°26	345°99	295°79	1°30	2°23
1891.0	239°39919	4°44182	4°39	1°33	1°965	2°7906	3°193	355°97	323°58	228°68	175°20	0°08	3°38
*1892.0	161°18720	2°79360	3°99	3°55	1°023	1°9940	2°415	319°82	230°91	111°38	54°61	0°63	1°04
1893.0	184°34997	2°14539	0°09	3°20	1°081	2°1974	2°636	284°66	139°23	477°38	420°61	0°40	3°19
1894.0	106°13798	0°49718	4°20	1°86	0°140	1°4009	1°858	248°50	46°56	360°08	300°02	0°95	0°85
1895.0	27°92599	5°89990	3°80	0°52	2°751	0°6043	1°080	212°34	411°56	242°78	179°43	1°49	2°01
*1896.0	309°71400	4°25169	3°41	2°73	1°810	3°3591	0°301	176°19	318°88	125°48	58°84	0°27	3°16
1897.0	332°87677	3°60348	4°01	2°39	1°868	0°0111	0°523	141°03	227°21	9°17	424°84	0°05	1°82
1898.0	254°66478	1°95527	3°61	1°05	0°926	2°7659	3°296	104°87	134°53	374°17	304°25	0°59	2°97
1899.0	176°45280	0°30706	3°22	3°26	3°538	1°9693	2°517	68°72	41°86	256°87	183°66	1°13	0°63
1900.0	98°24081	5°70977	2°82	1°92	2°596	1°1727	1°739	32°56	406°86	139°57	63°07	1°68	1°78
Periods	...	7°05093	4°51	3°56	3°553	3°5514	3°551	401°16	457°67	482°30	485°59	1°77	3°50

Constant applied to each entry in Column 2: -1°3000.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

### IX Values at Epoch of Mean Longitude and the Arguments

5	6	7	8	9				3	4	5	6	7	8
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
058	<sup>d</sup> 040	016	1850 0	3 13941	03167	071	<sup>d</sup> 095	1 04479	<sup>1</sup> 3	<sup>d</sup> 183	23	31	<sup>d</sup> 27
1 70	139	3 5	1851 0	36777	13794	17 6	18	039122	9	1084	156	05	13
083	39	77	1852 0	159613	06668	967	119	3 8769	6	0338	079	14	35
0595	088	3 8	1853 0	18 448	0954	1 08	142	008409	33	591	103	32	31
168	187	80	1854 0	10584	0416	0449	065	298055	30	3396	026	06	18
62	87	31	1855 0	0810	13043	1466	166	32698	7	2649	305	15	04
0133	036	183	1856 0	306074	05917	0707	089	167341	24	193	28	3	6
146	36	34	1857 0	38909	08791	948	11	01985	31	157	51	07	2
3158	335	185	1858 0	51745	01665	0189	035	136628	8	1410	175	16	08
670	085	137	1859 0	174581	1292	105	136	07171	25	0664	098	5	30
1683	184	088	*1860 0	097417	05166	0446	059	05914	3	3469	02	33	16
0195	034	14	1861 0	1205	08040	0687	08	040557	30	0171	045	17	13
8	133	091	1862 0	043088	0915	1704	005	33004	27	976	324	26	35
220	3	43	1863 0	314	1154	0945	106	64847	24	230	47	34	1
33	33	35	1864 0	43878	01416	0186	029	199490	1	1483	171	08	07
1745	181	045	1865 0	66713	790	0427	052	34133	8	1737	194	27	03
2757	8	355	1866 0	189549	00164	1443	153	168776	25	0991	118	01	25
070	030	307	1867 0	11385	10791	0684	076	103419	22	0244	41	09	11
183	130	58	*1868 0	03520	03665	1701	177	038062	19	3049	320	18	33
3295	329	39	1869 0	058056	06539	0166	23	072705	27	3303	343	02	30
0808	079	261	1870 0	336010	17166	1183	123	007348	24	2556	67	10	16
180	178	1	1871 0	58846	10040	0424	046	296995	21	1810	191	19	02
83	278	164	*1872 0	181681	02914	1441	147	31638	18	1064	114	28	4
1345	127	215	1873 0	04517	05788	168	169	66281	5	1317	137	1	20
357	6	166	1874 0	17353	16415	093	094	0094	22	0571	061	20	07
3369	36	112	1875 0	05189	0989	0164	17	135567	19	3376	339	29	28
0882	075	069	*1876 0	3814	02163	1180	117	07010	16	69	63	03	15
2894	75	11	1877 0	350978	05037	141	141	101854	3	2883	86	2	11
047	024	07	1878 0	73814	15664	066	64	039197	21	2137	210	30	33
1420	124	024	1879 0	196650	08538	1679	164	329143	18	1390	133	04	19
243	223	333	*1880 0	119485	01412	0920	088	63786	15	0644	056	13	05
0945	073	026	1881 0	1431	04286	1160	111	29849	22	0898	080	31	02
1957	172	336	1882 0	065157	14913	0402	034	233073	19	0151	003	05	24
2969	271	88	1883 0	343111	07787	1418	135	167716	16	2956	82	14	10
048	1	39	*1884 0	265946	0661	0659	058	102359	13	210	205	23	31
2494	20	290	1885 0	28878	3535	0900	081	137002	2	2463	229	06	28
0007	30	4	1886 0	11618	1416	0141	004	71645	17	1717	15	15	14
1019	069	193	1887 0	134453	07036	1158	105	00688	15	0970	76	24	01
2031	169	145	1888 0	057289	17664	0399	28	95935	12	0224	354	32	22
0545	18	196	1889 0	08015	0785	640	051	330578	19	0478	023	16	19
1557	118	147	1890 0	0961	13412	1656	152	6521	16	328	301	25	05
569	17	099	1891 0	80914	06286	897	075	199864	13	2536	225	33	27
08	316	50	1892 0	0375	16913	0138	176	134507	10	1790	148	7	13
2094	166	10	1893 0	6586	02034	379	01	169150	17	043	172	26	09
317	265	053	1894 0	149422	1661	1396	12	103793	14	1297	095	00	31
0618	15	005	1895 0	07257	05535	0637	045	038436	11	0551	019	8	17
1631	114	314	1896 0	35011	1616	1653	146	328083	09	3355	297	17	04
0144	314	007	1897 0	01799	0183	0119	169	00773	16	0058	321	01	0
1156	63	37	1898 0	95883	11910	1135	92	297369	13	863	44	09	22
2168	163	269	1899 0	218718	04784	0376	015	32012	10	116	168	18	08
3181	6	220	1900 0	141554	15411	1393	116	166655	07	1370	091	7	30
3500	350	358	Peiods	355118	17753	1776	178	355003	35	3551	355	35	36

T f d t h T L g i t l d d t J p t O b i t t i f o l u m m t b p p l m t e d b y t h i t l f T b l X I I X X X I I

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Date	Mean Long.	A	B	C	D	E	F	G	H	I	J	K	L
1900.0	98°24081	d 5'70977	d 2'82	d 1'92	d 2'596	d 1'1727	d 1'739	d 32'56	d 406'86	d 139'57	d 63'07	d 1'68	d 1'78
1901.0	20°02882	4'06156	2'42	0'58	1'654	0'3761	0'961	397'56	314'19	22'27	428'07	0'46	2'93
1902.0	301°81683	2'41335	2'03	2'79	0'713	3'1309	0'182	361'40	221'51	387'27	307'48	1'00	0'59
1903.0	223°60484	0'76514	1'63	1'45	3'324	2'3343	2'955	325'25	128'84	269'97	186'89	1'55	1'74
*1904.0	145°39285	6'16786	1'23	0'11	2'382	1'5377	2'177	289'09	36'16	152'66	66'30	0'32	2'90
1905.0	168°55562	5'51965	1'84	3'32	2'441	1'7411	2'398	253'93	402'16	36'36	432'30	0'10	1'56
1906.0	90°34363	3'87144	1'44	1'98	1'499	0'9445	1'620	217'78	309'49	401'36	311'71	0'64	2'71
1907.0	12°13164	2'22323	1'04	0'64	0'558	0'1480	0'842	181'62	216'81	284'06	191'12	1'19	0'37
*1908.0	293°91965	0'57501	0'65	2'85	3'169	2'9028	0'063	145'46	124'14	166'76	70'53	1'73	1'52
1909.0	317°08242	6'97773	1'25	2'51	3'227	3'1062	0'285	110'31	32'46	50'46	436'53	1'51	0'18
1910.0	238°87043	5'32952	0'85	1'17	2'286	2'3096	3'058	74'15	397'46	415'46	315'94	0'29	1'33
1911.0	160°65844	3'68131	0'46	3'38	1'344	1'5130	2'280	37'99	304'79	298'15	195'35	0'83	2'48
*1912.0	82°44645	2'03310	0'06	2'04	0'403	0'7164	1'501	1'84	212'11	180'85	74'76	1'38	0'14
1913.0	105°60922	1'38489	0'66	1'70	0'461	0'9198	1'723	367'84	120'44	64'55	440'76	1'15	2'29
1914.0	27°39723	6'78760	0'26	0'36	3'072	0'1232	0'944	331'68	27'76	429'55	320'17	1'70	3'45
1915.0	309°18525	5'13939	4'38	2'57	2'131	2'8780	0'166	295'52	392'76	312'25	199'58	0'47	1'11
*1916.0	230°97326	3'49118	3'98	1'23	1'189	2'0814	2'939	259'37	300'09	194'95	78'99	1'02	2'26
1917.0	254°13603	2'84297	0'07	0'89	1'247	2'2848	3'161	224'21	208'41	78'65	444'99	0'80	0'92
1918.0	175°92404	1'19476	4'19	3'10	0'306	1'4882	2'382	188'05	115'74	443'65	324'40	1'34	2'07
1919.0	97°71205	6'59748	3'79	1'76	2'917	0'6916	1'604	151'90	23'06	326'34	203'81	0'12	3'22
*1920.0	19°50006	4'94927	3'39	0'42	1'976	3'4465	0'826	115'74	388'06	209'04	83'22	0'66	0'88
1921.0	42°66283	4'30106	4'00	0'07	2'034	0'0985	1'047	80'58	296'39	92'74	449'22	0'44	3'03
1922.0	324°45084	2'65285	3'60	2'29	1'092	2'8533	0'269	44'42	203'71	457'74	328'63	0'98	0'69
1923.0	246°23885	1'00464	3'20	0'95	0'151	2'0567	3'042	8'27	111'04	340'44	208'05	1'53	1'84
*1924.0	168°02686	6'40735	2'81	3'16	2'762	1'2601	2'263	373'27	18'36	223'14	87'46	0'31	3'00
1925.0	191°18963	5'75914	3'41	2'82	2'820	1'4635	2'485	338'11	384'36	106'83	453'46	0'08	1'66
1926.0	112°97764	4'11093	3'01	1'48	1'879	0'6669	1'707	301'95	291'69	471'83	332'87	0'63	2'81
1927.0	34°76565	2'46272	2'62	0'13	0'937	3'4217	0'928	265'79	199'01	354'53	212'28	1'17	0'47
*1928.0	316°55365	0'81451	2'22	2'35	3'548	2'6251	0'150	229'64	106'34	237'23	91'69	1'72	1'62
1929.0	339°71644	0'16630	2'82	2'01	0'054	2'8285	0'372	194'48	14'66	120'93	457'69	1'49	0'28
1930.0	261°50445	5'56901	2'43	0'66	2'665	2'0319	3'144	158'32	379'66	3'63	337'10	0'27	1'43
1931.0	183°29246	3'92080	2'03	2'88	1'724	1'2353	2'366	122'17	286'99	368'63	216'51	0'81	2'58
*1932.0	105°08047	2'27259	1'63	1'54	0'782	0'4387	1'588	86'01	194'32	251'32	95'92	1'36	0'24
1933.0	128°24324	1'62438	2'24	1'19	0'841	0'6421	1'809	50'85	102'64	135'02	461'92	1'14	2'39
1934.0	50°03125	7'02710	1'84	3'41	3'452	3'3970	1'031	14'70	9'97	17'72	341'33	1'68	0'05
1935.0	331°81926	5'37889	1'44	2'07	2'510	2'6004	0'253	379'70	374'97	382'72	220'74	0'47	1'21
*1936.0	253°60727	3'73068	1'05	0'72	1'569	1'8038	3'026	343'54	282'29	265'42	100'15	1'00	2'36
1937.0	276°77004	3'08247	1'65	0'38	1'627	2'0072	3'247	308'38	190'62	149'12	466'15	0'78	1'02
1938.0	198°55805	1'43426	1'25	2'60	0'685	1'2106	2'469	272'23	97'94	31'81	345'56	1'32	2'17
1939.0	120°34606	6'83697	0'86	1'25	3'297	0'4140	1'690	236'07	5'27	396'81	224'97	0'10	3'32
*1940.0	42°13407	5'18876	0'46	3'47	2'355	3'1688	0'912	199'91	370'27	279'51	104'38	0'64	0'98
1941.0	65°29684	4'54055	1'06	3'13	2'414	3'3722	1'134	164'75	278'59	163'21	470'38	0'42	3'13
1942.0	347°08486	2'89234	0'67	1'78	1'472	2'5756	0'355	128'60	185'92	45'91	349'79	0'97	0'79
1943.0	268°87287	1'24413	0'27	0'44	0'530	1'7790	3'128	94'44	93'24	410'91	229'20	1'51	1'94
*1944.0	190°66088	6'64685	4'38	2'66	3'142	0'9824	2'350	56'28	0'57	293'61	108'61	0'29	3'10
1945.0	213°82365	5'99864	0'47	2'31	3'200	1'1858	2'572	21'13	366'57	177'31	474'61	0'06	1'76
1946.0	135°61166	4'35042	0'08	0'97	2'258	0'3892	1'793	386'13	273'89	60'00	354'01	0'61	2'91
1947.0	57°39967	2'70221	4'19	3'19	1'317	3'1441	1'015	349'97	181'22	425'00	233'43	1'15	0'57
*1948.0	339°18768	1'05400	3'80	1'84	0'375	2'3475	0'236	313'81	88'54	307'70	112'84	1'70	1'72
1949.0	2°35045	0'40579	4'40	1'50	0'434	2'5509	0'458	278'66	454'54	191'40	478'84	1'47	0'38
1950.0	284°13846	5'80851	4'00	0'16	3'045	1'7543	3'231	242'50	361'87	74'10	358'25	0'25	1'53
Periods	...	7'05093	4'51	3'56	3'553	3'5514	3'551	401'16	457'67	482'30	485'59	1'77	3'50

Constant applied to each entry in Column 2:  $-1^{\circ}31000$ .

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values at Epoch of Mean Longitude and the Arguments

5	6	7	8	9				3	4	5	6	7	8
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
3 181	2 6	20	1900 0	1 41554	1 5411	1 393	1 16	1 66655	0 7	1 370	0 91	7	3 0
0 693	0 11	1 71	1901 0	0 64390	0 8 85	0 634	0 39	1 01 98	4	0 6 4	0 14	0 1	1 6
1 706	1 11	1 3	1902 0	3 42344	0 159	1 651	1 4	3594	0 1	3 428	2 93	0 9	0 3
718	2 10	0 74	1903 0	65 79	1 1786	0 89	0 63	3 5588	3 4	682	17	1 8	2 4
0 31	3 10	26	1904 0	1 88015	4660	13	1 64	2 60 31	3 1	1 936	1 40	2 7	1 1
43	1 59	0 77	1905 0	2 10851	0 7534	0 374	0 9	2 94874	0 3	189	1 63	1 1	0 7
3 56	2 59	9	1906 0	1 33686	0 04 8	1 390	1 10	9517	0	1 443	0 87	1 9	2 9
0 768	0 08	3 38	1907 0	0 565 2	1 1035	0 631	33	1 64161	3	0 697	0 10	8	1 5
1 780	1 8	90	1908 0	3 34476	39 9	1 648	1 34	0 98804	2 9	3 501	89	0 2	0 1
0 93	3 07	3 41	1909 0	0 0 194	0 6783	113	1 57	1 33447	0 1	0 05	3 12	2 0	3 3
1 305	56	93	1910 0	2 80147	1 741	1 130	0 80	0 68090	3 4	3 009	2 36	2 9	2 0
3 18	1 56	44	1911 0	2 02983	1 284	0 371	0 3	0 0 733	3 1	2 62	1 59	0 3	0 6
3 33	55	1 95	1912 0	1 5819	0 3158	1 387	1 04	2 9 380	8	1 516	0 83	1 2	8
1 844	1 5	47	1913 0	1 48655	0 6 33	1 628	1 7	3 270 3	3 5	1 770	1 06	3 0	2 4
856	1	1 98	1914 0	0 7149	1 6660	869	0 50	61666	3	1 3	0 30	0 4	1 0
0 368	3 04	1 50	1915 0	3 49444	0 9534	0 110	1 51	1 96309	2 9	0 277	3 08	1 3	3 2
1 381	53	1 1	*1916 0	7 280	0 408	1 1 7	0 74	1 30952	6	3 081	32	2 1	1 8
3 393	53	1 52	1917 0	95116	0 528	1 368	0 97	1 65595	3 3	3 335	2 55	0 5	1 5
0 906	0 0	1 04	1918 0	17951	1 59 9	0 609	0 1	1 00238	3 0	589	1 79	1 4	0 1
1 918	1 01	0 55	1919 0	1 40787	0 8783	1 6 5	1 21	0 34881	2 8	1 84	1 02	2 3	2 3
2 930	01	0 7	*1920 0	63623	0 1657	0 866	0 44	3 4528	2 5	1 096	0 6	3 1	0 9
1 443	0 50	0 58	1921 0	0 86458	0 4531	1 107	0 68	0 04168	3 2	1 350	0 49	1 5	5
2 455	1 50	0 10	1922 0	0 09 94	1 5158	0 348	1 68	93814	2 9	0 603	3 8	2 4	7
3 468	49	3 19	1923 0	87 48	0 8 32	1 365	0 91	2 28457	2 6	3 408	2 51	3 2	1 3
98	3 49	2 71	1924 0	10084	0 0906	0 606	0 15	1 631 0	2 3	662	1 75	0 6	3 5
993	1 98	3 2	1925 0	3 919	0 3780	847	0 38	1 97743	3 0	2 915	1 98	2 5	3 2
0 505	98	2 74	1926 0	1 55755	1 4407	0 088	1 38	1 3 387	2 7	169	1 21	3 4	1 8
1 517	0 47	2 25	1927 0	0 78591	0 7 81	1 104	0 6	0 670 9	2 5	1 4 3	0 45	0 7	0 4
2 530	1 47	1 76	1928 0	0 014 7	0 0155	0 345	1 62	0 01673	2 2	0 676	3 23	1 6	2 6
1 042	3 45	8	1929 0	0 426	0 30 9	0 586	0 08	0 36316	9	930	3 47	0 0	2 2
0 55	0 95	1 79	1930 0	3 02216	1 3656	1 603	1 09	3 25962	2 6	0 184	2 70	0 9	0 9
3 067	1 95	1 31	1931 0	25052	0 6530	0 844	0 32	2 60606	2 3	2 988	1 94	1 7	3 0
0 580	2 94	0 8	1932 0	1 47888	1 7157	0 085	1 33	1 95249	0	2 242	1 17	2 6	1 7
2 592	1 44	1 34	1933 0	1 707 3	0 278	3 6	1 56	2 2989	2 7	2 496	1 41	1 0	1 3
0 104	43	0 85	1934 0	0 93559	1 905	1 34	0 79	1 64535	2 4	1 749	0 64	1 8	3 5
1 117	3 43	0 36	1935 0	0 16395	0 5779	583	0 0	0 99178	2 1	1 003	3 43	2 7	2 1
2 129	0 9	3 46	*1936 0	2 94349	1 6406	1 6 0	1 03	0 33821	1 9	0 57	2 66	0 1	0 7
0 642	2 92	0 39	1937 0	3 17184	0 15 7	0 065	1 26	0 68464	2 6	0 510	90	2 0	0 4
1 654	0 41	3 49	1938 0	40 20	1 2154	1 08	49	0 03107	2 3	3 315	2 13	8	2 5
667	1 4	3 0	1939 0	1 6 856	5028	0 3 3	1 50	2 9 754	2	569	1 37	0 2	1 2
0 180	2 40	52	1940 0	85691	1 5656	1 340	0 73	27397	1 7	1 8	0 60	1 1	3 4
192	89	3 03	1941 0	1 85 7	0 0777	1 581	96	6 040	4	0 76	0 84	2 9	3 0
3 5	1 89	55	1942 0	0 31363	1 14 4	0 8	0 19	1 96683	2 1	1 33	0 07	0 3	1 6
0 717	2 88	0 6	1943 0	3 09317	0 4278	0 063	1 20	1 31326	1 8	0 583	86	1 2	0 2
1 730	38	1 57	1944 0	3 152	1 4905	1 079	0 43	0 65969	1 5	3 388	9	2 1	2 4
0 4	37	0 9	1945 0	2 54988	0 00 6	1 3 0	0 66	1 00612	2 3	0 091	2 33	0 4	2 1
1 255	3 37	1 60	1946 0	1 77824	1 0653	0 561	1 67	0 35256	2 0	2 895	1 56	1 3	0 7
267	0 86	1 1	1947 0	1 00660	0 3527	1 578	0 90	3 249 2	1 7	2 149	0 79	2 2	9
3 79	1 85	0 63	1948 0	0 3495	1 4154	0 819	0 13	2 59545	1 4	1 40	0 03	3 0	1 5
1 792	35	1 15	1949 0	0 46331	1 70 8	1 060	0 36	2 94188	2 1	1 656	0 6	1 4	1 1
2 804	1 34	0 66	1950 0	3 24285	0 990	301	1 37	2 28831	1 8	0 910	3 05	2 3	3 3
3 500	3 50	3 58	Periods	3 55118	1 7753	1 776	1 78	3 55003	3 5	3 551	3 55	3 5	3 6

T f l d th T L g i t l d d to J p t O b i t t h t i f C l u m m t b p p l m t d b y t h q t i f T b l XII XXXII

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Date	Mean Long.	A	B	C	D	E	F	G	H	I	J	K	L
	°	d	d	d	d	d	d	d	d	d	d	d	d
1950·0	284·13846	5·80851	4·00	0·16	3·045	1·7543	3·231	242·50	361·87	74·10	358·25	0·25	1·53
1951·0	205·92647	4·16030	3·61	2·38	2·103	0·9577	2·453	206·34	269·19	439·10	237·66	0·80	2·68
*1952·0	127·71448	2·51209	3·21	1·03	1·162	0·1611	1·674	170·19	176·52	321·80	117·07	1·34	0·34
1953·0	150·87725	1·86388	3·81	0·69	1·220	0·3645	1·896	135·03	84·84	205·49	483·07	1·12	2·49
1954·0	72·66526	0·21567	3·41	2·91	0·278	3·1193	1·118	98·87	449·84	88·19	362·48	1·66	0·15
1955·0	354·45327	5·61838	3·02	1·56	2·890	2·3227	0·339	62·72	357·17	453·19	241·89	0·44	1·31
*1956·0	276·24128	3·97017	2·62	0·22	1·948	1·5261	3·112	26·56	264·49	335·89	121·30	0·98	2·46
1957·0	299·40406	3·32196	3·22	3·44	2·007	1·7295	3·334	392·56	172·82	219·59	1·71	0·76	1·12
1958·0	221·19207	1·67375	2·83	2·09	1·065	0·9329	2·555	356·40	80·14	102·29	366·71	1·30	2·27
1959·0	142·98008	0·02554	2·43	0·75	0·123	0·1363	1·777	320·24	445·14	467·29	246·12	0·08	3·42
*1960·0	64·76809	5·42826	2·03	2·97	2·735	2·8912	0·999	284·09	352·47	349·98	125·53	0·63	1·08
1961·0	87·93086	4·78005	2·64	2·62	2·793	3·0946	1·220	248·93	260·79	233·68	5·94	0·40	3·23
1962·0	9·71887	3·13183	2·24	1·28	1·851	2·2980	0·442	212·77	168·12	116·38	370·94	0·95	0·89
1963·0	291·50688	1·48362	1·84	3·50	0·910	1·5014	3·215	176·62	75·45	481·38	250·35	1·49	2·04
*1964·0	213·29489	6·88634	1·45	2·15	3·521	0·7048	2·436	140·46	440·45	364·08	129·76	0·27	3·20
1965·0	236·45766	6·23813	2·05	1·81	0·027	0·9082	2·658	105·30	348·77	247·78	10·17	0·04	1·86
1966·0	158·24567	4·58992	1·65	0·47	2·638	0·1116	1·880	69·15	256·10	130·48	375·17	0·59	3·01
1967·0	80·03368	2·94171	1·26	2·68	1·696	2·8664	1·101	32·99	163·42	13·17	254·59	1·13	0·67
*1968·0	1·82169	1·29350	0·86	1·34	0·755	2·0698	0·323	397·99	70·75	378·17	134·00	1·68	1·82
1969·0	24·98447	0·64529	1·46	1·00	0·813	2·2732	0·545	362·83	436·75	261·87	14·41	1·46	0·48
1970·0	306·77248	6·04800	1·07	3·21	3·424	1·4766	3·318	326·68	344·07	144·57	379·41	0·23	1·63
1971·0	228·56049	4·39979	0·67	1·87	2·483	0·6800	2·539	290·52	251·40	27·27	258·82	0·78	2·78
*1972·0	150·34850	2·75158	0·27	0·53	1·541	3·4349	1·761	254·36	158·72	392·27	138·23	1·32	0·44
1973·0	173·51127	2·10337	0·88	0·19	1·600	0·0868	1·982	219·20	67·05	275·97	18·64	1·10	2·59
1974·0	95·29928	0·45516	0·48	2·40	0·658	2·8417	1·204	183·05	432·05	158·66	383·64	1·64	0·25
1975·0	17·08729	5·85788	0·08	1·06	3·269	2·0451	0·426	146·89	339·37	41·36	263·05	0·42	1·41
*1976·0	298·87530	4·20967	4·20	3·27	2·328	1·2485	3·199	110·73	246·70	406·36	142·46	0·97	2·56
1977·0	322·03807	3·56146	0·29	2·93	2·386	1·4519	3·420	75·58	155·02	290·06	22·87	0·74	1·22
1978·0	243·82608	1·91324	4·40	1·59	1·444	0·6553	2·642	39·42	62·35	172·76	387·87	1·29	2·37
1979·0	165·61409	0·26503	4·01	0·25	0·503	3·4101	1·864	3·26	427·35	55·46	267·28	0·06	0·02
*1980·0	87·40210	5·66775	3·61	2·46	3·114	2·6135	1·085	368·26	334·67	420·46	146·69	0·61	1·18
1981·0	110·56487	5·01954	4·21	2·12	3·172	2·8169	1·307	333·11	243·00	304·15	27·10	0·38	3·33
1982·0	32·35288	3·37133	3·82	0·78	2·231	2·0203	0·528	296·95	150·32	186·85	392·10	0·93	0·99
1983·0	314·14089	1·72312	3·42	2·99	1·289	1·2237	3·301	260·79	57·65	69·55	271·51	1·47	2·14
*1984·0	235·92890	0·07491	3·02	1·65	0·348	0·4271	2·523	224·64	422·65	434·55	150·92	0·25	3·30
1985·0	259·09168	6·47762	3·62	1·31	0·406	0·6305	2·745	189·48	330·97	318·25	31·33	0·03	1·96
1986·0	180·87969	4·82941	3·23	3·52	3·017	3·3854	1·966	153·32	238·30	200·95	396·33	0·57	3·11
1987·0	102·66770	3·18120	2·83	2·18	2·076	2·5888	1·188	117·16	145·62	83·64	275·74	1·12	0·77
*1988·0	24·45571	1·53299	2·43	0·84	1·134	1·7922	0·410	81·01	52·95	448·64	155·15	1·66	1·92
1989·0	47·61848	0·88478	3·04	0·50	1·193	1·9956	0·631	45·85	418·95	332·34	35·56	1·44	0·58
1990·0	329·40649	6·28750	2·64	2·71	0·251	1·1990	3·404	9·69	326·27	215·04	400·56	0·21	1·73
1991·0	251·19450	4·63929	2·24	1·37	2·862	0·4024	2·626	374·69	233·60	97·74	279·97	0·76	2·88
*1992·0	172·98251	2·99108	1·85	0·03	1·921	3·1572	1·847	338·54	140·92	462·74	159·38	1·30	0·54
1993·0	196·14528	2·34287	2·45	3·24	1·979	3·3606	2·069	303·38	49·25	346·44	39·79	1·08	2·69
1994·0	117·93329	0·69465	2·05	1·90	1·037	2·5640	1·291	267·22	414·25	229·14	404·79	1·63	0·35
1995·0	39·72130	6·09737	1·66	0·56	0·096	1·7674	0·512	231·07	321·58	111·83	284·20	0·40	1·51
*1996·0	321·50931	4·44916	1·26	2·77	2·707	0·9708	3·285	194·91	228·90	476·83	163·61	0·95	2·66
1997·0	344·67209	3·80095	1·86	2·43	2·766	1·1742	3·507	159·75	137·23	360·53	44·02	0·72	1·32
1998·0	266·46010	2·15274	1·47	1·09	1·824	0·3776	2·728	123·60	44·55	243·23	409·02	1·27	2·47
1999·0	188·24811	0·50453	1·07	3·30	0·882	3·1325	1·950	87·44	409·55	125·93	288·43	0·04	0·13
*2000·0	110·03612	5·90724	0·67	1·96	3·494	2·3359	1·172	51·28	316·88	8·63	167·84	0·59	1·28
Periods	...	7·05093	4·51	4·56	3·553	3·5514	3·551	401·16	457·67	482·30	485·59	1·77	3·50

Constant applied to each entry in Column 2:  $-1^{\circ}31000$ .

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values at Epoch of Mean Longitude and the Arguments

5	6	7	8	9				3	4	5	6	7	8
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
8 4	1 34	0 66	1950 O	3 24 85	99	0 301	1 37	28831	1 8	0 910	d 3 05	d 2 3	d 3 3
0 317	2 34	17	1951 O	471 1	0 2776	1 317	0 60	1 63475	1 5	0 164	8	3	1 9
1 3 9	3 33	3 7	*1952 O	1 69956	1 34 3	558	1 61	98118	1	968	1 5	0 5	6
3 341	1 83	0	1953 O	1 9 79	1 6 77	0 799	0 07	1 3 761	1 9	3	1 75	4	0
0 854	8	3 30	1954 O	1 156 8	9151	0 40	1 07	67404	1 7	2 475	0 99	3 3	4
1 866	0 32	2 81	1955 O	0 38463	0 2 5	1 57	30	0 0 047	1 4	1 729	0 2	0 6	1 0
879	1 31	2 33	1956 O	3 16417	1 65	0 98	1 31	2 91694	1 1	0 983	3 01	1 5	3
1 391	3 3	84	1957 O	3 39 53	1 55 6	539	1 54	3 6337	1 8	1 36	3 24	3 4	8
404	8	36	1958 O	6 089	0 8400	1 555	0 77	2 6 980	1 5	0 490	48	0 8	1 5
3 416	1 79	1 87	1959 O	1 849 4	1274	0 796	0 01	1 956 3	1 2	3 95	1 71	1 6	0 1
929	79	1 38	1960 O	1 7760	1 1901	0 037	1 01	1 30 66	0 9	548	95	2 5	2 3
941	8	1 9	1961 O	1 30596	1 4775	0 78	1 4	1 64909	1 6	802	1 18	0 9	1 9
0 454	8	1 41	1962 O	5343	0 7649	1 95	48	0 9955	1 3	2 056	4	1 7	5
1 466	3 7	0 93	1963 O	3 31385	0 5 3	0 536	1 48	0 34195	1 1	1 309	3 0	2 6	2 7
478	77	0 44	1964 O	54 1	1 1150	1 55	0 7	3 3842	0 8	0 563	2 44	3 5	1 3
0 99	76	0 96	1965 O	2 77057	1 40 4	0 018	0 95	0 03481	1 5	0 817	67	1 9	1 0
003	0 25	0 47	1966 O	1 99893	0 6898	1 034	18	93128	1	0 070	1 91	2 7	3 1
3 016	1 25	3 57	1967 O	1 27 8	1 75 6	0 275	1 19	2 7771	0 9	875	1 14	0 1	1 8
0 5 8	4	3 08	*1968 O	45564	1 0400	1 92	0 4	1 62414	0 6	129	0 37	1 0	0 4
2 541	0 74	0 1	1969 O	0 684	1 3 74	1 533	0 65	1 97057	1 3	2 38	0 61	8	0 0
0 053	1 73	3 11	1970 O	3 46354	0 6148	0 774	1 66	1 3170	1 0	1 636	3 40	0 2	2 2
1 066	73	6	1971 O	69189	1 6775	0 15	0 89	0 66344	0 7	0 890	2 63	1 1	0 8
0 78	2	2 14	*1972 O	1 9 0 5	0 9649	1 32	0 1	0 0 987	0 5	0 143	1 86	2 0	3 0
0 591	22	65	1973 O	2 14861	1 5 3	1 73	0 35	0 35630	1 2	0 397	10	0 3	2 7
1 603	3 1	17	1974 O	1 37696	0 5397	0 514	1 36	3 5 76	9	3 02	1 33	1	1 3
2 616	0 7	1 68	1975 O	6053	1 6024	1 530	59	59919	0 6	2 455	0 57	2 1	3 5
0 128	1 70	1 0	*1976 O	3 38486	0 8898	0 771	1 60	1 94563	0 3	1 709	3 35	9	2 1
141	0 19	1 71	1977 O	0 06 04	1 1772	1 01	0 05	29 06	1 0	1 963	0 04	1 3	1 7
3 153	1 19	1 22	1978 O	2 84157	0 4646	0 53	1 06	1 63849	0 7	1 216	2 82	2 2	0 4
0 665	2 18	0 73	1979 O	6993	1 5273	1 70	0 29	0 9849	0 4	0 470	0 6	3 1	2 5
1 678	3 18	0 5	*1980 O	1 98 9	0 8147	0 511	1 30	0 33135	0 1	3 274	1 29	0 4	1
0 19	1 67	77	1981 O	1 5 665	1 10 1	0 75	1 53	0 67778	0 9	3 5 8	1 53	2 3	0 8
1 03	67	0 8	1982 O	0 755 0	3895	1 769	0 76	0 02421	0 6	2 782	0 76	3 2	3 0
15	16	3 38	1983 O	3 53454	1 45	1 009	1 77	2 9 068	0 3	2 035	0 0	0 5	1 6
3 28	1 16	89	1984 O	76 90	0 7396	0 50	1 0	2 26711	0 0	1 89	2 78	1 4	0 2
1 740	3 15	3 41	1985 O	991 6	1 0 70	0 491	1 23	61354	7	1 543	3 0	3 3	3 4
2 753	0 64	2 9	1986 O	2 1961	0 3144	1 508	0 46	1 95997	0 4	0 796	2 25	0 7	2 0
0 65	1 64	43	1987 O	1 44797	1 3771	0 749	1 47	1 3 640	1	0 050	1 49	1 5	0 7
1 278	2 63	1 95	1988 O	0 67633	0 6645	1 766	0 70	65 83	3 4	855	0 7	4	9
3 290	1 13	2 46	1989 O	90468	9519	0 31	0 93	0 999 6	0 5	3 108	0 96	0 8	5
0 803	1	1 98	1990 O	0 13304	0 2393	1 47	0 16	0 34570	0 3	362	0 19	1 7	1 1
1 815	3 12	1 49	1991 O	2 91258	1 3020	0 488	1 17	3 24216	0 0	1 616	2 98	5	3 3
2 8 7	61	1 1	1992 O	2 14094	5894	1 505	0 40	2 58859	3 2	0 869	1	3 4	1 9
1 340	2 61	1 52	1993 O	2 36929	0 8769	1 746	0 63	2 9350	0 4	1 123	44	1 8	1 6
352	0 10	1 03	1994 O	1 59765	0 1643	0 987	1 64	2 28145	0 1	0 377	1 68	2 6	0
3 365	1 09	0 55	1995 O	0 82601	1 227	0 28	0 87	1 62789	3 4	3 181	0 91	0 0	4
0 877	0 9	0 06	*1996 O	5437	0 5144	1 44	0 10	0 9743	3 1	2 435	0 15	0 9	1 0
2 890	0 58	0 58	1997 O	0 8 72	0 8 18	1 484	0 34	1 3 075	0	2 689	38	8	6
0 40	1 58	0 09	1998 O	3 06 6	0 089	0 7 6	1 34	0 66718	3 5	1 942	3 17	0 1	8
1 415	2 57	3 19	1999 O	9062	1 1519	1 743	0 57	0 01361	3 2	1 196	40	1 0	1 4
4 7	0 07	7	2000 O	1 51898	0 4393	0 984	1 58	91007	2 9	0 450	1 64	1 9	0 1
3 50	3 50	3 58	Periods	3 55118	1 7753	1 776	1 78	3 55003	3 5	3 551	3 55	3 5	3 6

T a d t l T L g i t d d d t J p t O b i t t h t l f C l m m t h p p l m t d b y t h q i f T b l XII XXXII

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

**X**      **Motions of Mean Longitude and the Arguments for Days**

1	2	3		5	6	7	8	9	10	11	12	13	14
Day	Mean Long.	A	B	C	D	E	F	G—J	K	L	M	N	O
	°	d	d	d	d	d	d	d	d	d	d	d	d
<b>Jan.</b>													
1	101°37476	1°00000	1°00	1°00	1°000	1°0000	1°000	1°00	1°00	1°00	1°000	1°00	1°00
2	202°74952	2°00000	2°00	2°00	2°000	2°0000	2°000	2°00	0°23	2°00	2°000	2°00	2°00
3	304°12429	3°00000	3°00	3°00	3°000	3°0000	3°000	3°00	1°23	3°00	3°000	3°00	3°00
4	45°49905	4°00000	4°00	0°44	0°447	0°4486	0°449	4°00	0°46	0°50	0°500	0°50	0°42
5	146°87381	5°00000	0°49	1°44	1°447	1°4486	1°449	5°00	1°46	1°50	1°500	1°50	1°42
6	248°24857	6°00000	1°49	2°44	2°447	2°4486	2°449	6°00	0°69	2°50	2°500	2°50	2°42
7	349°62333	7°00000	2°49	3°44	3°447	3°4486	3°449	7°00	1°69	0°00	0°000	0°00	3°42
8	90°99809	0°94907	3°49	0°89	0°894	0°8972	0°898	8°00	0°92	1°00	1°000	1°00	0°83
9	192°37286	1°94907	4°49	1°89	1°894	1°8972	1°898	9°00	0°15	2°00	2°000	2°00	1°83
10	293°74762	2°94907	0°98	2°89	2°894	2°8972	2°898	10°00	1°15	3°00	3°000	3°00	2°83
11	35°12238	3°94907	1°98	0°33	0°342	0°3457	0°346	11°00	0°39	0°50	0°500	0°50	0°25
12	136°49714	4°94907	2°98	1°33	1°342	1°3457	1°346	12°00	1°39	1°50	1°500	1°50	1°25
13	237°87190	5°94907	3°98	2°33	2°342	2°3457	2°346	13°00	0°62	2°50	2°500	2°50	2°25
14	339°24666	6°94907	0°47	3°33	3°342	3°3457	3°346	14°00	1°62	0°01	0°000	0°00	3°25
15	80°62143	0°89815	1°47	0°77	0°789	0°7943	0°795	15°00	0°85	1°01	1°000	1°00	0°67
16	181°99619	1°89815	2°47	1°77	1°789	1°7943	1°795	16°00	0°08	2°01	2°000	2°00	1°67
17	283°37095	2°89815	3°47	2°77	2°789	2°7943	2°795	17°00	1°08	3°01	3°000	3°00	2°67
18	24°74571	3°89815	4°47	0°22	0°236	0°2429	0°244	18°00	0°31	0°51	0°501	0°50	0°08
19	126°12047	4°89815	0°96	1°22	1°236	1°2429	1°244	19°00	1°31	1°51	1°501	1°50	1°08
20	227°49523	5°89815	1°96	2°22	2°236	2°2429	2°244	20°00	0°54	2°51	2°501	2°50	2°08
21	328°87000	6°89815	2°96	3°22	3°236	3°2429	3°244	21°00	1°54	0°01	0°001	0°00	3°08
22	70°24476	0°84722	3°96	0°66	0°683	0°6915	0°693	22°00	0°77	1°01	1°001	1°00	0°50
23	171°61952	1°84722	0°44	1°66	1°683	1°6915	1°693	23°00	0°00	2°01	2°001	2°00	1°50
24	272°99428	2°84722	1°44	2°66	2°683	2°6915	2°693	24°00	1°00	3°01	3°001	3°00	2°50
25	14°36904	3°84722	2°44	0°10	0°130	0°1400	0°141	25°00	0°23	0°51	0°501	0°50	3°50
26	115°74380	4°84722	3°44	1°10	1°130	1°1400	1°141	26°00	1°23	1°51	1°501	1°50	0°92
27	217°11857	5°84722	4°44	2°10	2°130	2°1400	2°141	27°00	0°46	2°51	2°501	2°50	1°92
28	318°49333	6°84722	0°93	3°10	3°130	3°1400	3°141	28°00	1°46	0°01	0°001	0°00	2°92
29	59°86809	0°79629	1°93	0°55	0°577	0°5886	0°590	29°00	0°69	1°01	1°001	1°00	0°33
30	161°24285	1°79629	2°93	1°55	1°577	1°5886	1°590	30°00	1°69	2°01	2°001	2°00	1°33
<b>Feb.</b>													
31	262°61761	2°79629	3°93	2°55	2°577	2°5886	2°590	31°00	0°92	3°01	3°001	3°00	2°33
1	3°99237	3°79629	0°42	3°55	0°025	0°0372	0°039	32°00	0°15	0°51	0°501	0°50	3°33
2	105°36714	4°79629	1°42	0°99	1°025	1°0372	1°039	33°00	1°15	1°51	1°501	1°50	0°75
3	206°74190	5°79629	2°42	1°99	2°025	2°0372	2°039	34°00	0°39	2°51	2°501	2°50	1°75
4	308°11666	6°79629	3°42	2°99	3°025	3°0372	3°039	35°00	1°39	0°01	0°001	0°00	2°75
5	49°49142	0°74536	4°42	0°43	0°472	0°4858	0°488	36°00	0°62	1°01	1°001	1°00	0°17
6	150°86618	1°74536	0°91	1°43	1°472	1°4858	1°488	37°00	1°62	2°01	2°001	2°00	1°17
7	252°24094	2°74536	1°91	2°43	2°472	2°4858	2°488	38°00	0°85	3°01	3°001	3°00	2°17
8	353°61571	3°74536	2°91	3°43	3°472	3°4858	3°488	39°00	0°08	0°52	0°501	0°50	3°17
9	94°99047	4°74536	3°91	0°88	0°919	0°9343	0°936	40°00	1°08	1°52	1°501	1°50	0°58
10	196°36523	5°74536	0°40	1°88	1°919	1°9343	1°936	41°00	0°31	2°52	2°501	2°50	1°58
11	297°73999	6°74536	1°40	2°88	2°919	2°9343	2°936	42°00	1°31	0°02	0°001	0°00	2°58
12	39°11475	0°69444	2°40	0°32	0°366	0°3829	0°385	43°00	0°54	1°02	1°001	1°00	0°00
13	140°48951	1°69444	3°40	1°32	1°366	1°3829	1°385	44°00	1°54	2°02	2°001	2°00	1°00
14	241°86428	2°69444	4°40	2°32	2°366	2°3829	2°385	45°00	0°77	3°02	3°001	3°00	2°00
15	343°23904	3°69444	0°89	3°32	3°366	3°3829	3°385	46°00	0°00	0°52	0°501	0°50	3°00
16	84°61380	4°69444	1°89	0°76	0°813	0°8315	0°834	47°00	1°00	1°52	1°501	1°50	0°42
17	185°98856	5°69444	2°89	1°76	1°813	1°8315	1°834	48°00	0°23	2°52	2°501	2°50	1°42
18	287°36332	6°69444	3°89	2°76	2°813	2°8315	2°834	49°00	1°23	0°02	0°002	0°00	2°42
19	28°73808	0°64351	0°38	0°21	0°260	0°2801	0°283	50°00	0°46	1°02	1°002	1°00	3°42
20	130°11285	1°64351	1°38	1°21	1°260	1°2801	1°283	51°00	1°46	2°02	2°002	2°00	0°84
21	231°48761	2°64351	2°38	2°21	2°260	2°2801	2°283	52°00	0°70	3°02	3°002	3°00	1°84
22	332°86237	3°64351	3°38	3°21	3°260	3°2801	3°283	53°00	1°70	0°52	0°502	0°50	2°84

In Leap Year diminish the date in Columns 1, 15, by 1 day after Feb. 28.



# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

### X Motions of Mean Longitude and the Arguments for Days

5	6	7	8	9				3	4	5	6
Day	P	Q	R	S	T	U	V	W	X	Y	Z
<b>Jan</b>				d				d	d		d
1	0 03	1 000	1 0000	1 000	1 00	1 0000	1 0	1 00	1 00	1 0	1 0
2	0 5	2 00	0 47	2 4	0 2	000	0	0	00	2 0	2 0
3	0 008	3 0000	1 2 47	1 4	1	3 00 0	3 0	3 00	3 00	3 0	3 0
4	0 011	0 4488	4494	0 449	0 45	0 44997	0 5	0 449	45	0 5	0 4
5	0 014	1 4488	1 4494	1 449	1 45	1 44997	1 5	1 449	1 45	1 5	1 4
6	0 016	4488	0 6741	0 673	0 67	44997	2 5	2 449	45	2 5	2 4
7	19	3 4488	1 6741	1 673	1 67	3 44997	3 5	3 449	3 45	0 0	3 4
8	0 0	89764	0 8988	0 898	0 90	0 89993	0 9	0 898	0 9	1 0	0 9
9	0 5	1 89764	0 1 35	1 2	0 1	1 89993	1 9	1 898	1 90	2 0	1 9
10	0 027	2 89764	1 1 35	1 12	1 1	2 89993	2 9	2 898	90	3 0	9
11	0 30	3 4646	0 348	0 347	0 35	0 34990	0 4	3 47	0 35	5	0 3
12	0 033	1 34646	1 3482	1 347	1 35	1 34990	1 4	1 347	1 35	1 5	1 3
13	36	2 34646	57 9	571	57	2 3499	4	2 347	35	5	2 3
14	0 038	3 34646	1 57 9	1 571	1 57	3 34990	3 4	3 347	3 35	0 0	3 3
15	0 041	795 8	0 7976	0 796	0 8	0 79980	0 8	0 796	0 80	1 0	0 8
16	0 044	1 79528	0 02 3	0 0 0	0 02	1 79986	1 8	1 796	1 80	0	1 8
17	47	79528	1 02 3	1 020	1 0	79986	8	2 796	2 80	3 0	2 8
18	0 049	0 24409	0 47	0 45	0 4	0 24983	0 3	0 245	0 24	0 5	0 2
19	0 052	1 4409	1 470	1 245	1 24	1 4983	1 3	1 245	1 24	1 5	1 2
20	0 055	2 4409	0 4717	0 469	0 47	4983	2 3	2 245	2 24	2 5	2 2
21	0 058	3 4409	1 4717	1 469	1 47	3 24983	3 3	3 45	3 24	0	3 2
22	0 060	0 69 91	0 6964	0 694	69	0 69979	0 7	0 694	0 69	1 0	0 7
23	0 063	1 69291	1 6964	1 694	1 69	1 69979	1 7	1 694	1 69	0	1 7
24	0 066	2 69291	0 9210	0 918	0 9	2 69979	7	2 694	2 69	3 0	2 7
25	0 068	0 14173	0 1457	0 143	0 14	0 14976	0 2	0 143	0 14	0 5	0 1
26	0 071	1 14173	1 1457	1 143	1 14	1 14976	1 2	1 143	1 14	1 5	1 1
27	0 074	2 14173	0 37 4	0 367	0 37	14976	2	2 143	2 14	2 5	2 1
28	0 77	3 14173	1 3704	1 367	1 37	3 14976	3	3 143	3 14	0 0	3 1
29	0 079	0 59055	0 5951	59	0 59	0 59972	0 6	0 593	0 59	1 0	0 5
30	0 082	1 59055	1 5951	1 59	1 59	1 5997	1 6	1 593	1 59	0	1 5
<b>Feb</b>											
31	0 085	2 59055	0 8198	0 816	0 8	2 59972	2 6	2 593	2 59	3 0	5
1	0 88	0 03937	0 0445	0 040	0 04	0 04969	0 1	0 042	0 04	0 5	0 0
2	0 090	1 3937	1 445	1 40	1 04	1 04969	1 1	1 042	1 04	1 5	1 0
3	0 093	2 03937	0 2692	0 65	0 26	0 4969	1	0 42	2 04	5	0
4	0 096	3 3937	1 692	1 265	1 26	3 04969	3 1	3 04	3 04	0 0	3 0
5	0 099	0 48819	4939	0 489	0 49	0 49965	0 5	0 491	0 49	1 0	0 4
6	0 101	1 48819	1 4939	1 489	1 49	1 49965	1 5	1 491	1 49	2 0	1 4
7	0 104	48819	7186	0 714	0 71	2 49965	2 5	2 491	2 49	3	2 4
8	107	3 48819	1 7186	1 714	1 71	3 49965	0	3 491	3 49	0 5	3 4
9	0 110	0 93701	0 9433	0 938	0 94	0 9496	1 0	0 940	0 94	1 5	0 9
10	0 11	1 93701	0 1680	0 163	0 16	1 94962	2 0	1 940	1 94	5	1 9
11	0 115	2 93701	1 168	1 163	1 16	94962	3 0	2 94	2 94	0 0	9
12	118	38583	39 7	0 387	0 39	0 39958	4	0 389	39	1 0	0 3
13	0 121	1 38583	1 39 7	1 387	1 39	1 39958	1 4	1 389	1 39	0	1 3
14	0 1 3	38583	0 6174	0 61	0 61	39958	2 4	2 389	39	3 0	3
15	1 6	3 38583	1 6174	1 61	1 61	3 39958	3 4	3 389	3 39	0 5	3 3
16	0 129	0 83465	0 8421	0 836	0 84	0 84955	0 9	0 838	84	1 5	0 8
17	0 13	1 83465	0 668	0 061	0 06	1 84955	1 9	1 838	1 84	2 5	1 8
18	0 134	2 83465	1 0668	1 061	1 06	2 84955	9	2 838	2 84	0 0	2 8
19	0 137	0 28347	0 915	0 285	0 8	0 2995	0 3	0 287	0 8	1 0	0 2
20	0 140	1 8347	1 2915	1 285	1 28	1 2995	1 3	1 287	1 28	2 0	1 2
21	0 142	2 28347	0 5162	0 510	0 51	2 9952	2 3	2 287	2 8	3 0	2
22	0 145	3 28347	1 5162	1 510	1 51	3 29952	3 3	3 287	3 28	0 5	3

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# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Day	Mean Long.	A	B	C	D	E	F	G-J	K	L	M	N	O
	°	d	d	d	d	d	d	d	d	d	d	d	d
<b>Feb. 23</b>	74°23713	4°64351	4°38	0°65	0°708	0°7287	0°731	54°00	0°92	1°52	1°502	1°50	0°25
<b>24</b>	175°61189	5°64351	0°87	1°65	1°708	1°7287	1°731	55°00	0°16	2°52	2°502	2°50	1°25
<b>25</b>	276°98665	6°64351	1°87	2°65	2°708	2°7287	2°731	56°00	1°16	0°02	0°002	0°00	2°25
<b>26</b>	18°36142	0°59258	2°87	0°09	0°155	0°1772	0°180	57°00	0°39	1°02	1°002	1°00	3°25
<b>27</b>	119°73618	1°59258	3°87	1°09	1°155	1°1772	1°180	58°00	1°39	2°02	2°002	2°00	0°67
<b>28</b>	221°11094	2°59258	0°36	2°09	2°155	2°1772	2°180	59°00	0°62	3°02	3°002	3°00	1°67
<b>Mar. 1</b>	322°48570	3°59258	1°36	3°09	3°155	3°1772	3°180	60°00	1°62	0°53	0°502	0°50	2°67
<b>2</b>	63°86046	4°59258	2°36	0°54	0°602	0°6258	0°629	61°00	0°85	1°53	1°502	1°50	0°09
<b>3</b>	165°23522	5°59258	3°36	1°54	1°602	1°6258	1°629	62°00	0°08	2°53	2°502	2°50	1°09
<b>4</b>	266°60999	6°59258	4°36	2°54	2°602	2°6258	2°629	63°00	1°08	0°03	0°002	0°00	2°09
<b>5</b>	7°98475	0°54166	0°84	3°54	0°049	0°0744	0°078	64°00	0°31	1°03	1°002	1°00	3°09
<b>6</b>	109°35951	1°54166	1°84	0°98	1°049	1°0744	1°078	65°00	1°31	2°03	2°002	2°00	0°50
<b>7</b>	210°73427	2°54166	2°84	1°98	2°049	2°0744	2°078	66°00	0°54	3°03	3°002	3°00	1°50
<b>8</b>	312°10903	3°54166	3°84	2°98	3°049	3°0744	3°078	67°00	1°54	0°53	0°502	0°50	2°50
<b>9</b>	53°48379	4°54166	0°33	0°42	0°496	0°5230	0°526	68°00	0°77	1°53	1°502	1°50	3°50
<b>10</b>	154°85856	5°54166	1°33	1°42	1°496	1°5230	1°526	69°00	0°00	2°53	2°502	2°50	0°92
<b>11</b>	256°23332	6°54166	2°33	2°42	2°496	2°5230	2°526	70°00	1°00	0°03	0°002	0°00	1°92
<b>12</b>	357°60808	0°49073	3°33	3°42	3°496	3°5230	3°526	71°00	0°23	1°03	1°002	1°00	2°92
<b>13</b>	98°98284	1°49073	4°33	0°87	0°943	0°9715	0°975	72°00	1°23	2°03	2°002	2°00	0°34
<b>14</b>	200°35760	2°49073	0°82	1°87	1°943	1°9715	1°975	73°00	0°46	3°03	3°002	3°00	1°34
<b>15</b>	301°73236	3°49073	1°82	2°87	2°943	2°9715	2°975	74°00	1°46	0°53	0°503	0°50	2°34
<b>16</b>	43°10713	4°49073	2°82	0°31	0°391	0°4201	0°424	75°00	0°69	1°53	1°503	1°50	3°34
<b>17</b>	144°48189	5°49073	3°82	1°31	1°391	1°4201	1°424	76°00	1°69	2°53	2°503	2°50	0°75
<b>18</b>	245°85665	6°49073	0°31	2°31	2°391	2°4201	2°424	77°00	0°92	0°03	0°003	0°00	1°75
<b>19</b>	347°23141	0°43980	1°31	3°31	3°391	3°4201	3°424	78°00	0°16	1°03	1°003	1°00	2°75
<b>20</b>	88°60617	1°43980	2°31	0°75	0°838	0°8687	0°873	79°00	1°16	2°03	2°003	2°00	0°17
<b>21</b>	189°98093	2°43980	3°31	1°75	1°838	1°8687	1°873	80°00	0°39	3°03	3°003	3°00	1°17
<b>22</b>	291°35570	3°43980	4°31	2°75	2°838	2°8687	2°873	81°00	1°39	0°53	0°503	0°50	2°17
<b>23</b>	32°73046	4°43980	0°80	0°20	0°285	0°3173	0°321	82°00	0°62	1°53	1°503	1°50	3°17
<b>24</b>	134°10522	5°43980	1°80	1°20	1°285	1°3173	1°321	83°00	1°62	2°53	2°503	2°50	0°59
<b>25</b>	235°47998	6°43980	2°80	2°20	2°285	2°3173	2°321	84°00	0°85	0°04	0°003	0°00	1°59
<b>26</b>	336°85474	0°38887	3°80	3°20	3°285	3°3173	3°321	85°00	0°08	1°04	1°003	1°00	2°59
<b>27</b>	78°22950	1°38887	0°29	0°64	0°732	0°7658	0°770	86°00	1°08	2°04	2°003	2°00	0°00
<b>28</b>	179°60427	2°38887	1°29	1°64	1°732	1°7658	1°770	87°00	0°31	3°04	3°003	3°00	1°00
<b>29</b>	280°97903	3°38887	2°29	2°64	2°732	2°7658	2°770	88°00	1°31	0°54	0°503	0°50	2°00
<b>30</b>	22°35379	4°38887	3°29	0°08	0°179	0°2144	0°219	89°00	0°54	1°54	1°503	1°50	3°00
<b>31</b>	123°72855	5°38887	4°29	1°08	1°179	1°2144	1°219	90°00	1°54	2°54	2°503	2°50	0°42
<b>April 1</b>	225°10331	6°38887	0°78	2°08	2°179	2°2144	2°219	91°00	0°77	0°04	0°003	0°00	1°42
<b>2</b>	326°47807	0°33795	1°78	3°08	3°179	3°2144	3°219	92°00	0°00	1°04	1°003	1°00	2°42
<b>3</b>	67°85284	1°33795	2°78	0°53	0°626	0°6630	0°668	93°00	1°00	2°04	2°003	2°00	3°42
<b>4</b>	169°22760	2°33795	3°78	1°53	1°626	1°6630	1°668	94°00	0°23	3°04	3°003	3°00	0°84
<b>5</b>	270°60236	3°33795	0°27	2°53	2°626	2°6630	2°668	95°00	1°23	0°54	0°503	0°50	1°84
<b>6</b>	11°97712	4°33795	1°27	3°53	0°074	0°1116	0°116	96°00	0°46	1°54	1°503	1°50	2°84
<b>7</b>	113°35188	5°33795	2°27	0°97	1°074	1°1116	1°116	97°00	1°46	2°54	2°503	2°50	0°25
<b>8</b>	214°72664	6°33795	3°27	1°97	2°074	2°1116	2°116	98°00	0°69	0°04	0°003	0°00	1°25
<b>9</b>	316°10141	0°28702	4°27	2°97	3°074	3°1116	3°116	99°00	1°69	1°04	1°003	1°00	2°25
<b>10</b>	57°47617	1°28702	0°76	0°41	0°521	0°5601	0°565	100°00	0°93	2°04	2°003	2°00	3°25
<b>11</b>	158°85093	2°28702	1°76	1°41	1°521	1°5601	1°565	101°00	0°16	3°04	3°003	3°00	0°67
<b>12</b>	260°22569	3°28702	2°76	2°41	2°521	2°5601	2°565	102°00	1°16	0°54	0°503	0°50	1°67
<b>13</b>	1°60045	4°28702	3°76	3°41	3°521	0°0087	0°014	103°00	0°39	1°54	1°503	1°50	2°67
<b>14</b>	102°97521	5°28702	0°25	0°86	0°968	1°0087	1°014	104°00	1°39	2°54	2°503	2°50	0°09
<b>15</b>	204°34998	6°28702	1°25	1°86	1°968	2°0087	2°014	105°00	0°62	0°04	0°004	0°00	1°09
<b>16</b>	305°72474	0°23609	2°25	2°86	2°968	3°0087	3°014	106°00	1°62	1°04	1°004	1°00	2°09

In Leap Year diminish the date in Columns 1, 15, by 1 day after Feb. 28.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

5	6	7	8	9				3	4	5	6
Day	P	Q	R	S	T	U	V	W	X	Y	Z
<b>Feb 23</b>	0 148	0 73228	0 7409	0 734	0 73	0 74948	0 8	0 736	73	1 5	0 6
<b>24</b>	0 151	1 73 8	1 7409	1 734	1 73	1 74948	1 8	1 736	1 73	5	1 6
<b>25</b>	0 153	732 8	0 9656	0 959	96	74948	8	736	2 73	0 0	2 6
<b>26</b>	0 156	0 1811	0 1903	0 183	0 18	0 19945	0 3	185	0 18	1 0	0 1
<b>27</b>	0 159	1 18110	1 19 3	1 183	1 18	1 19945	1 3	1 185	1 18	2 0	1 1
<b>28</b>	16	181	0 4150	0 408	11	19945	2 3	2 185	18	3 0	2 1
<b>Mar 1</b>	0 164	3 1811	1 4150	1 408	1 41	3 19945	3 3	3 185	3 18	0 5	3 1
<b>2</b>	0 167	0 6 992	6397	0 632	63	0 64941	7	0 634	0 63	1 5	0 5
<b>3</b>	0 170	1 6 99	1 6397	1 63	1 63	1 64941	1 7	1 634	1 63	5	1 5
<b>4</b>	173	6 992	0 8644	0 856	0 85	2 64941	7	2 634	63	0 0	2 5
<b>5</b>	0 175	0 7874	0 0891	0 081	8	0 09938	0	0 083	0 08	1 0	0 0
<b>6</b>	0 178	1 07874	1 891	1 081	1 8	1 09938	1 2	1 083	1 08	2 0	1 0
<b>7</b>	0 181	0 7874	3138	3 5	0 30	0 9938	2	2 083	2 08	3 0	0
<b>8</b>	184	3 7874	1 3138	1 305	1 3	3 09938	3 2	3 083	3 08	0 5	3 0
<b>9</b>	186	52756	0 5385	0 53	0 53	54934	6	0 532	0 53	1 5	0 4
<b>10</b>	187	1 52756	1 5385	1 53	1 53	1 54934	1 6	1 53	1 53	2 5	1 4
<b>11</b>	0 19	5 756	0 7631	0 754	0 75	2 54934	6	2 53	2 53	0 0	2 4
<b>12</b>	0 195	3 52756	1 7631	1 754	1 75	3 54934	0 1	3 53	3 53	1 0	3 4
<b>13</b>	197	0 97638	0 9878	0 979	0 98	0 99931	1 1	0 981	0 98	2 0	0 9
<b>14</b>	0 00	1 97638	0 125	0 203	0 20	1 99931	2 1	1 981	1 98	3 0	1 9
<b>15</b>	0 03	2 97638	1 1 5	1 03	1 20	99931	3 1	981	2 98	5	9
<b>16</b>	0 5	0 425 0	0 437	4 8	0 43	0 44927	5	0 430	0 43	1 5	0 3
<b>17</b>	8	1 4 5 0	1 4372	1 4 8	1 43	1 44927	1 5	1 430	1 43	2 5	1 3
<b>18</b>	0 11	425	0 6619	0 652	0 65	2 449 7	2 5	430	43	0 0	2 3
<b>19</b>	0 214	3 425 0	1 6619	1 652	1 65	3 449 7	0 0	3 430	3 43	1 0	3 3
<b>20</b>	16	0 8740	8866	877	87	0 899 4	1 0	0 879	0 88	2 0	0 7
<b>21</b>	19	1 87402	0 1113	0 101	0 1	1 89924	0	1 879	1 88	3 0	1 7
<b>22</b>	0	2 874	1 1113	1 1 1	1 10	899 4	3 0	2 879	2 88	0 5	2 7
<b>23</b>	0 5	0 32 84	0 3360	0 3 6	0 3	0 34920	0 4	0 3 8	0 32	1 5	0 2
<b>24</b>	0 7	1 32284	1 3360	1 3 6	1 3	1 349	1 4	1 3 8	1 32	2 5	1 2
<b>25</b>	0 30	2 3 284	0 56 7	0 550	0 55	34920	4	2 328	2 3	0 0	2
<b>26</b>	0 33	3 3 284	1 56 7	1 55	1 55	3 34920	3 4	3 328	3 32	1 0	3
<b>27</b>	0 36	0 77166	0 7854	0 775	0 77	0 79917	9	0 778	0 77	0	0 6
<b>28</b>	0 38	1 77166	0 101	1 775	0 00	1 79917	1 9	1 778	1 77	3 0	1 6
<b>29</b>	241	2 77166	1 0101	0 999	1 00	2 79917	2 9	778	2 77	0 5	2 6
<b>30</b>	44	2 47	0 348	0 2 4	0 2	0 24913	0 3	0 2 7	0 22	1 5	0 1
<b>31</b>	47	1 2 047	1 2348	1 2 4	1	1 24913	1 3	1 2 7	1 22	2 5	1 1
<b>April 1</b>	249	2 22047	0 4595	0 448	0 45	24913	2 3	2 227	2 22	0	2 1
<b>2</b>	0 5	3 047	1 4595	1 448	1 45	3 24913	3 3	3 27	3 2	1 0	3 1
<b>3</b>	0 55	0 669 9	0 6842	0 67	0 67	0 69910	0 8	0 676	0 67	2 0	0 5
<b>4</b>	58	1 66929	1 684	1 67	1 67	1 69910	1 8	1 676	1 67	3 0	1 5
<b>5</b>	0 6	669 9	0 9089	0 897	0 89	2 69910	2 8	2 676	2 67	0 5	2 5
<b>6</b>	0 63	0 11811	0 1336	0 1 1	0 12	0 14907	0 2	0 125	0 12	1 5	0 0
<b>7</b>	0 66	1 11811	1 1336	1 1 1	1 12	1 14907	1 2	1 125	1 12	2 5	1 0
<b>8</b>	0 268	11811	3583	0 346	0 34	2 149 7	2 2	125	2 1	0 0	2 0
<b>9</b>	0 71	3 11811	1 3583	1 346	1 34	3 14907	3 2	3 125	3 12	1 0	3 0
<b>10</b>	0 274	56693	0 583	0 57	0 57	0 59903	0 7	0 574	0 57	2 0	0 4
<b>11</b>	77	1 56693	1 5830	1 570	1 57	1 59903	1 7	1 574	1 57	3 0	1 4
<b>12</b>	0 279	2 56693	0 8077	795	0 79	2 599 3	2 7	574	2 57	0 5	2 4
<b>13</b>	0 282	01575	0 03 4	0 019	0 0	0 4900	0 2	0 023	0 0	1 5	3 4
<b>14</b>	0 85	1 01575	1 03 4	1 019	1 0	1 0490	1 2	1 023	1 0	5	0 8
<b>15</b>	0 88	2 01575	0 2571	0 44	0 4	0490	2	2 023	2 02	0 0	1 8
<b>16</b>	290	3 01575	1 571	1 44	1 4	3 4900	3 2	3 023	3 02	1 0	2 8

I L p Y dimi in th d tel O l m s by ly ft F b 8

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

*X continued* Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Day	Mean Long.	A	B	C	D	E	F	G-J	K	L	M	N	O
	°	d	d	d	d	d	d	d	d	d	d	d	d
<b>April 17</b>	47°09950	1°23609	3'25	0'30	0'415	0'4573	0'463	107'00	0'85	2'04	2'004	2'00	3'09
<b>18</b>	148°47426	2°23609	4'25	1'30	1'415	1'4573	1'463	108'00	0'08	3'04	3'004	3'00	0'50
<b>19</b>	249°84902	3°23609	0'73	2'30	2'415	2'4573	2'463	109'00	1'08	0'55	0'504	0'50	1'50
<b>20</b>	351°22378	4°23609	1'73	3'30	3'415	3'4573	3'463	110'00	0'31	1'55	1'504	1'50	2'50
<b>21</b>	92°59855	5°23609	2'73	0'74	0'862	0'9059	0'911	111'00	1'31	2'55	2'504	2'50	3'50
<b>22</b>	193°97331	6°23609	3'73	1'74	1'862	1'9059	1'911	112'00	0'54	0'05	0'004	0'00	0'92
<b>23</b>	295°34807	0'18517	0'22	2'74	2'862	2'9059	2'911	113'00	1'54	1'05	1'004	1'00	1'92
<b>24</b>	36°72283	1'18517	1'22	0'18	0'309	0'3545	0'360	114'00	0'77	2'05	2'004	2'00	2'92
<b>25</b>	138°09759	2'18517	2'22	1'18	1'309	1'3545	1'360	115'00	0'00	3'05	3'004	3'00	0'34
<b>26</b>	239°47235	3'18517	3'22	2'18	2'309	2'3545	2'360	116'00	1'00	0'55	0'504	0'50	1'34
<b>27</b>	340°84712	4'18517	4'22	3'18	3'309	3'3545	3'360	117'00	0'23	1'55	1'504	1'50	2'34
<b>28</b>	82°22188	5'18517	0'71	0'63	0'757	0'8030	0'809	118'00	1'23	2'55	2'504	2'50	3'34
<b>29</b>	183°59664	6'18517	1'71	1'63	1'757	1'8030	1'809	119'00	0'46	0'05	0'004	0'00	0'75
<b>30</b>	284°97140	0'13424	2'71	2'63	2'757	2'8030	2'809	120'00	1'46	1'05	1'004	1'00	1'75
<b>May 1</b>	26°34616	1'13424	3'71	0'07	0'204	0'2516	0'258	121'00	0'70	2'05	2'004	2'00	2'75
<b>2</b>	127°72092	2'13424	0'20	1'07	1'204	1'2516	1'258	122'00	1'70	3'05	3'004	3'00	0'17
<b>3</b>	229°09569	3'13424	1'20	2'07	2'204	2'2516	2'258	123'00	0'93	0'55	0'504	0'50	1'17
<b>4</b>	330°47045	4'13424	2'20	3'07	3'204	3'2516	3'258	124'00	0'16	1'55	1'504	1'50	2'17
<b>5</b>	71°84521	5'13424	3'20	0'51	0'651	0'7002	0'706	125'00	1'16	2'55	2'504	2'50	3'17
<b>6</b>	173°21997	6'13424	4'20	1'51	1'651	1'7002	1'706	126'00	0'39	0'05	0'004	0'00	0'59
<b>7</b>	274°59473	0'08331	0'69	2'51	2'651	2'7002	2'706	127'00	1'39	1'05	1'004	1'00	1'59
<b>8</b>	15°96949	1'08331	1'69	3'51	0'098	0'1488	0'155	128'00	0'62	2'05	2'004	2'00	2'59
<b>9</b>	117°34426	2'08331	2'69	0'96	1'098	1'1488	1'155	129'00	1'62	3'05	3'004	3'00	0'01
<b>10</b>	218°71902	3'08331	3'69	1'96	2'098	2'1488	2'155	130'00	0'85	0'55	0'504	0'50	1'01
<b>11</b>	320°09378	4'08331	0'18	2'96	3'098	3'1488	3'155	131'00	0'08	1'55	1'504	1'50	2'01
<b>12</b>	61°46854	5'08331	1'18	0'40	0'545	0'5973	0'604	132'00	1'08	2'55	2'504	2'50	3'01
<b>13</b>	162°84330	6'08331	2'18	1'40	1'545	1'5973	1'604	133'00	0'31	0'06	0'005	0'00	0'42
<b>14</b>	264°21806	0'03238	3'18	2'40	2'545	2'5973	2'604	134'00	1'31	1'06	1'005	1'00	1'42
<b>15</b>	5°59283	1'03238	4'18	3'40	3'545	0'0459	0'053	135'00	0'54	2'06	2'005	2'00	2'42
<b>16</b>	106°96759	2'03238	0'67	0'84	0'992	1'0459	1'053	136'00	1'54	3'06	3'005	3'00	3'42
<b>17</b>	208°34235	3'03238	1'67	1'84	1'992	2'0459	2'053	137'00	0'77	0'56	0'505	0'50	0'84
<b>18</b>	309°71711	4'03238	2'67	2'84	2'992	3'0459	3'053	138'00	0'00	1'56	1'505	1'50	1'84
<b>19</b>	51°09187	5'03238	3'67	0'29	0'440	0'4945	0'501	139'00	1'00	2'56	2'505	2'50	2'84
<b>20</b>	152°46663	6'03238	0'16	1'29	1'440	1'4945	1'501	140'00	0'23	0'06	0'005	0'00	0'26
<b>21</b>	253°84140	7'03238	1'16	2'29	2'440	2'4945	2'501	141'00	1'23	1'06	1'005	1'00	1'26
<b>22</b>	355°21616	0'98146	2'16	3'29	3'440	3'4945	3'501	142'00	0'46	2'06	2'005	2'00	2'26
<b>23</b>	96°59092	1'98146	3'16	0'73	0'887	0'9431	0'950	143'00	1'46	3'06	3'005	3'00	3'26
<b>24</b>	197°96568	2'98146	4'16	1'73	1'887	1'9431	1'950	144'00	0'70	0'56	0'505	0'50	0'67
<b>25</b>	299°34044	3'98146	0'65	2'73	2'887	2'9431	2'950	145'00	1'70	1'56	1'505	1'50	1'67
<b>26</b>	40°71520	4'98146	1'65	0'17	0'334	0'3916	0'399	146'00	0'93	2'56	2'505	2'50	2'67
<b>27</b>	142°08997	5'98146	2'65	1'17	1'334	1'3916	1'399	147'00	0'16	0'06	0'005	0'00	0'09
<b>28</b>	243°46473	6'98146	3'65	2'17	2'334	2'3916	2'399	148'00	1'16	1'06	1'005	1'00	1'09
<b>29</b>	344°83949	0'93053	0'13	3'17	3'334	3'3916	3'399	149'00	0'39	2'06	2'005	2'00	2'09
<b>30</b>	86°21425	1'93053	1'13	0'62	0'781	0'8402	0'848	150'00	1'39	3'06	3'005	3'00	3'09
<b>31</b>	187°58901	2'93053	2'13	1'62	1'781	1'8402	1'848	151'00	0'62	0'56	0'505	0'50	0'51
<b>June 1</b>	288°96377	3'93053	3'13	2'62	2'781	2'8402	2'848	152'00	1'62	1'56	1'505	1'50	1'51
<b>2</b>	30°33854	4'93053	4'13	0'06	0'228	0'2888	0'296	153'00	0'85	2'56	2'505	2'50	2'51
<b>3</b>	131°71330	5'93053	0'62	1'06	1'228	1'2888	1'296	154'00	0'08	0'07	0'005	0'00	3'51
<b>4</b>	233°08806	6'93053	1'62	2'06	2'228	2'2888	2'296	155'00	1'08	1'07	1'005	1'00	0'92
<b>5</b>	334°46282	0'87960	2'62	3'06	3'228	3'2888	3'296	156'00	0'31	2'07	2'005	2'00	1'92
<b>6</b>	75°83758	1'87960	3'62	0'50	0'675	0'7374	0'745	157'00	1'31	3'07	3'005	3'00	2'92
<b>7</b>	177°21234	2'87960	0'11	1'50	1'675	1'7374	1'745	158'00	0'54	0'57	0'505	0'50	0'34

In Leap Year diminish the date in Columns 1, 15, by 1 day after Feb. 28.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

**X continued** Motions of Mean Longitude and the Arguments for Days

5	6	7	8	9				3	4	5	6
D y	P	Q	R	S	T	U	V	W	X	Y	Z
<b>Apr 1</b>	0 293	0 46457	0 4818	0 468	0 47	49896	0 6	0 472	a	a	a
<b>17</b>	0 293	0 46457	0 4818	0 468	0 47	49896	0 6	0 472	0 47	2 0	0 3
<b>18</b>	0 296	1 46457	1 4818	1 468	1 47	1 49896	1 6	1 47	1 47	3 0	1 3
<b>19</b>	0 299	2 46457	7 065	693	0 69	49896	2 6	47	2 47	0 5	3
<b>20</b>	0 301	3 46457	1 7 65	1 693	1 69	3 49896	0 1	3 472	3 47	1 5	3 3
<b>21</b>	0 304	0 91339	0 931	0 917	0 91	0 94893	1 1	0 921	0 92	2 5	0 7
<b>22</b>	0 307	1 91339	0 1559	0 142	0 14	1 94893	1	1 9 1	1 9	0	1 7
<b>23</b>	0 310	2 91339	1 1559	1 142	1 14	2 94893	3 1	2 9 1	2 92	1 0	2 7
<b>24</b>	0 31	0 36 1	0 3806	0 366	0 36	0 39889	0 5	0 370	0 36	2	0 2
<b>25</b>	3 5	1 36 1	1 3806	1 366	1 36	1 39889	1 5	1 370	1 36	3	1 2
<b>26</b>	0 318	36221	0 605	591	0 59	2 39889	2 5	370	36	0 5	2
<b>27</b>	3 1	3 36221	1 6052	1 591	1 59	3 39889	0 0	3 370	3 36	1 5	3 2
<b>28</b>	3 3	0 81103	0 8 99	0 815	0 81	0 84886	1 0	0 819	81	2 5	0 6
<b>29</b>	0 3 6	1 81103	0 0546	0 040	0 4	1 84886	0	1 819	1 81	0	1 6
<b>30</b>	0 329	2 81103	1 0546	1 040	1 4	84886	3 0	2 819	2 81	1 0	2 6
<b>May 1</b>	0 332	0 25985	0 793	0 64	0 6	0 2988	0 4	0 68	0 26	2 0	0 1
<b>2</b>	0 334	1 25985	1 793	1 264	1 6	1 2988	1 4	1 268	1 26	3 0	1 1
<b>3</b>	0 337	2 25985	0 5040	0 488	0 49	2 2988	4	2 268	6	0 5	2 1
<b>4</b>	0 340	3 5985	1 5040	1 488	1 49	3 9882	3 4	3 268	3 6	1 5	3 1
<b>5</b>	0 34	0 7 866	0 7 87	0 713	0 71	0 74879	0 9	0 717	0 71	2 5	0 5
<b>6</b>	0 345	1 70866	1 7287	1 713	1 71	1 74879	1 9	1 717	1 71	0 0	1 5
<b>7</b>	0 348	70866	0 9534	0 937	0 93	2 74879	9	2 717	2 71	1 0	2 5
<b>8</b>	0 351	15748	0 1781	0 16	0 16	0 19875	0 3	0 166	0 16	2 0	3 5
<b>9</b>	0 353	1 15748	1 1781	1 162	1 16	1 19875	1 3	1 166	1 16	3 0	0 9
<b>10</b>	0 356	15748	0 40 8	0 386	0 38	2 19875	2 3	2 166	16	0 5	1 9
<b>11</b>	0 359	3 15748	1 4028	1 386	1 38	3 19875	3 3	3 166	3 16	1 5	9
<b>12</b>	0 36	0 60630	0 6275	0 611	61	0 64872	0 8	0 615	0 61	2 5	0 4
<b>13</b>	0 364	1 60630	1 6275	1 611	1 61	1 64872	1 8	1 615	1 61	0 0	1 4
<b>14</b>	0 367	60630	0 852	0 835	0 83	2 6487	8	2 615	61	1	2 4
<b>15</b>	370	0 05512	0 0769	0 060	0 06	0 09869	0 2	0 064	0 06	2 0	3 4
<b>16</b>	373	1 551	1 0769	1 060	1 6	1 09869	1	1 064	1 06	3 0	0 8
<b>17</b>	0 375	2 05512	0 3016	0 284	0 8	0 09869		0 64	2 06	0 5	1 8
<b>18</b>	0 378	3 05512	1 3016	1 84	1 28	3 09869	3 2	3 064	3 06	1 5	2 8
<b>19</b>	381	0 50394	0 5 63	0 509	51	0 54865	0 7	0 514	0 51	2 5	3
<b>20</b>	384	1 50394	1 5263	1 509	1 51	1 54865	1 7	1 514	1 51	0 0	1 3
<b>21</b>	0 386	2 50394	0 7510	0 733	0 73	2 54865	7	2 514	2 51	1 0	2 3
<b>22</b>	0 389	3 50394	1 7510	1 733	1 73	3 54865	0 1	3 514	3 51	0	3 3
<b>23</b>	39	95 76	0 9757	0 958	0 95	0 99862	1 1	0 963	0 96	3 0	0 7
<b>24</b>	0 395	1 95 76	0 004	0 182	0 18	1 9986	1	1 963	1 96	0 5	1 7
<b>25</b>	0 397	2 95 76	1 2004	1 182	1 18	2 9986	3 1	963	96	1 5	2 7
<b>26</b>	0 400	0 40158	0 4251	0 407	0 4	0 44858	0 6	0 41	0 40	2 5	0 2
<b>27</b>	0 403	1 40158	1 4251	1 407	1 40	1 44858	1 6	1 412	1 40	3 5	1 2
<b>28</b>	405	2 40158	0 6498	631	0 63	44858	2 6	2 412	2 40	0 9	2 2
<b>29</b>	0 4 8	3 40158	1 6498	1 631	1 63	3 44858	0 0	3 41	3 40	1 9	3 2
<b>30</b>	0 411	0 8504	0 8745	0 856	0 85	0 89855	1 0	0 861	0 85	2 9	0 6
<b>31</b>	414	1 85040	0 992	0 080	0 08	1 89855	0	1 861	1 85	0 4	1 6
<b>June 1</b>	0 416	85040	1 0992	1 08	1 08	2 89855	3 0	2 861	85	1 4	6
<b>2</b>	0 419	0 99	0 3 39	304	0 3	0 34851	0 5	0 310	0 30	4	0 0
<b>3</b>	0 4	1 2992	1 3 39	1 304	1 30	1 34851	1 5	1 310	1 30	3 4	1 0
<b>4</b>	0 425	2 2992	0 5486	0 529	0 52	34851	5	310	30	0 9	2 0
<b>5</b>	0 427	3 29922	1 5486	1 529	1 5	3 34851	0	3 310	3 30	1 9	3
<b>6</b>	0 430	0 74804	0 7733	0 753	0 75	0 79848	1 0	0 759	0 75	9	0 5
<b>7</b>	0 433	1 74804	1 7733	1 753	1 75	1 79848	2 0	1 759	1 75	0 4	1 5

I L p Y d m i h t l d t i O l m s by d y f t F b 8

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

X continued Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Day	Mean Long.	A	B	C	D	E	F	G-J	K	L	M	N	O
		d	d	d	d	d	d	d	d	d	d	d	d
<b>June 8</b>	278°58711	3'87960	1'11	2'50	2'675	2'7374	2'745	159'00	1'55	1'57	1'505	1'50	1'34
<b>9</b>	19'96187	4'87960	2'11	3'50	0'123	0'1860	0'194	160'00	0'78	2'57	2'505	2'50	2'34
<b>10</b>	121'33663	5'87960	3'11	0'95	1'123	1'1860	1'194	161'00	0'01	0'07	0'005	0'00	3'34
<b>11</b>	222'71139	6'87960	4'11	1'95	2'123	2'1860	2'194	162'00	1'01	1'07	1'005	1'00	0'76
<b>12</b>	324'08615	0'82868	0'60	2'95	3'123	3'1860	3'194	163'00	0'24	2'07	2'005	2'00	1'76
<b>13</b>	65'46091	1'82868	1'60	0'39	0'570	0'6345	0'643	164'00	1'24	3'07	3'005	3'00	2'76
<b>14</b>	166'83568	2'82868	2'60	1'39	1'570	1'6345	1'643	165'00	0'47	0'57	0'506	0'50	0'17
<b>15</b>	268'21044	3'82868	3'60	2'39	2'570	2'6345	2'643	166'00	1'47	1'57	1'506	1'50	1'17
<b>16</b>	9'58520	4'82868	0'09	3'39	0'017	0'0831	0'091	167'00	0'70	2'57	2'506	2'50	2'17
<b>17</b>	110'95996	5'82868	1'09	0'83	1'017	1'0831	1'091	168'00	1'70	0'07	0'006	0'00	3'17
<b>18</b>	212'33472	6'82868	2'09	1'83	2'017	2'0831	2'091	169'00	0'93	1'07	1'006	1'00	0'59
<b>19</b>	313'70948	0'77775	3'09	2'83	3'017	3'0831	3'091	170'00	0'16	2'07	2'006	2'00	1'59
<b>20</b>	55'08425	1'77775	4'09	0'28	0'464	0'5317	0'540	171'00	1'16	3'07	3'006	3'00	2'59
<b>21</b>	156'45901	2'77775	0'58	1'28	1'464	1'5317	1'540	172'00	0'39	0'57	0'506	0'50	0'01
<b>22</b>	257'83377	3'77775	1'58	2'28	2'464	2'5317	2'540	173'00	1'39	1'57	1'506	1'50	1'01
<b>23</b>	359'20853	4'77775	2'58	3'28	3'464	3'5317	3'540	174'00	0'62	2'57	2'506	2'50	2'01
<b>24</b>	100'58329	5'77775	3'58	0'72	0'911	0'9803	0'989	175'00	1'62	0'07	0'006	0'00	3'01
<b>25</b>	201'95805	6'77775	0'07	1'72	1'911	1'9803	1'989	176'00	0'85	1'07	1'006	1'00	0'42
<b>26</b>	303'33282	0'72682	1'07	2'72	2'911	2'9803	2'989	177'00	0'09	2'07	2'006	2'00	1'42
<b>27</b>	44'70758	1'72682	2'07	0'16	0'358	0'4288	0'438	178'00	1'09	3'07	3'006	3'00	2'42
<b>28</b>	146'08234	2'72682	3'07	1'16	1'358	1'4288	1'438	179'00	0'32	0'58	0'506	0'50	3'42
<b>29</b>	247'45710	3'72682	4'07	2'16	2'358	2'4288	2'438	180'00	1'32	1'58	1'506	1'50	0'84
<b>30</b>	348'83186	4'72682	0'56	3'16	3'358	3'4288	3'438	181'00	0'55	2'58	2'506	2'50	1'84
<b>July 1</b>	90'20662	5'72682	1'56	0'61	0'806	0'8774	0'886	182'00	1'55	0'08	0'006	0'00	2'84
<b>2</b>	191'58139	6'72682	2'56	1'61	1'806	1'8774	1'886	183'00	0'78	1'08	1'006	1'00	0'26
<b>3</b>	292'95615	0'67589	3'56	2'61	2'806	2'8774	2'886	184'00	0'01	2'08	2'006	2'00	1'26
<b>4</b>	34'33091	1'67589	0'05	0'05	0'253	0'3260	0'335	185'00	1'01	3'08	3'006	3'00	2'26
<b>5</b>	135'70567	2'67589	1'05	1'05	1'253	1'3260	1'335	186'00	0'24	0'58	0'506	0'50	3'26
<b>6</b>	237'08043	3'67589	2'05	2'05	2'253	2'3260	2'335	187'00	1'24	1'58	1'506	1'50	0'67
<b>7</b>	338'45519	4'67589	3'05	3'05	3'253	3'3260	3'335	188'00	0'47	2'58	2'506	2'50	1'67
<b>8</b>	79'82996	5'67589	4'05	0'49	0'700	0'7746	0'784	189'00	1'47	0'08	0'006	0'00	2'67
<b>9</b>	181'20472	6'67589	0'53	1'49	1'700	1'7746	1'784	190'00	0'70	1'08	1'006	1'00	0'09
<b>10</b>	282'57948	0'62497	1'53	2'49	2'700	2'7746	2'784	191'00	1'70	2'08	2'006	2'00	1'09
<b>11</b>	23'95424	1'62497	2'53	3'49	0'147	0'2231	0'233	192'00	0'93	3'08	3'006	3'00	2'09
<b>12</b>	125'32900	2'62497	3'53	0'94	1'147	1'2231	1'233	193'00	0'16	0'58	0'507	0'50	3'09
<b>13</b>	226'70376	3'62497	0'02	1'94	2'147	2'2231	2'233	194'00	1'16	1'58	1'507	1'50	0'51
<b>14</b>	328'07853	4'62497	1'02	2'94	3'147	3'2231	3'233	195'00	0'39	2'58	2'507	2'50	1'51
<b>15</b>	69'45329	5'62497	2'02	0'38	0'594	0'6717	0'681	196'00	1'39	0'08	0'007	0'00	2'51
<b>16</b>	170'82805	6'62497	3'02	1'38	1'594	1'6717	1'681	197'00	0'62	1'08	1'007	1'00	3'51
<b>17</b>	272'20281	0'57404	4'02	2'38	2'594	2'6717	2'681	198'00	1'62	2'08	2'007	2'00	0'92
<b>18</b>	13'57757	1'57404	0'51	3'38	0'041	0'1203	0'130	199'00	0'86	3'08	3'007	3'00	1'92
<b>19</b>	114'95233	2'57404	1'51	0'82	1'041	1'1203	1'130	200'00	0'09	0'58	0'507	0'50	2'92
<b>20</b>	216'32710	3'57404	2'51	1'82	2'041	2'1203	2'130	201'00	1'09	1'58	1'507	1'50	0'34
<b>21</b>	317'70186	4'57404	3'51	2'82	3'041	3'1203	3'130	202'00	0'32	2'58	2'507	2'50	1'34
<b>22</b>	59'07662	5'57404	0'00	0'27	0'489	0'5689	0'579	203'00	1'32	0'09	0'007	0'00	2'34
<b>23</b>	160'45138	6'57404	1'00	1'27	1'489	1'5689	1'579	204'00	0'55	1'09	1'007	1'00	3'34
<b>24</b>	261'82614	0'52311	2'00	2'27	2'489	2'5689	2'579	205'00	1'55	2'09	2'007	2'00	0'76
<b>25</b>	3'20090	1'52311	3'00	3'27	3'489	0'0175	0'028	206'00	0'78	3'09	3'007	3'00	1'76
<b>26</b>	104'57567	2'52311	4'00	0'71	0'936	1'0175	1'028	207'00	0'01	0'59	0'507	0'50	2'76
<b>27</b>	205'95043	3'52311	0'49	1'71	1'936	2'0175	2'028	208'00	1'01	1'59	1'507	1'50	0'17
<b>28</b>	307'32519	4'52311	1'49	2'71	2'936	3'0175	3'028	209'00	0'24	2'59	2'507	2'50	1'17
<b>29</b>	48'69995	5'52311	2'49	0'15	0'383	0'4660	0'476	210'00	1'24	0'09	0'007	0'00	2'17

In Leap Year diminish the date in Columns 1, 15, by 1 day after Feb. 28.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

5	6	7	8	9				3	4	5	6
D y	P	Q	R	S	T	U	V	W	X	Y	Z
<b>June 8</b>	0 436	<sup>a</sup> 74804	0 9980	<sup>a</sup> 0 978	0 97	79848	3	759	75	1 4	2 5
<b>9</b>	0 438	19685	27		0 20	4844	4	0 08	0 0	2 4	3 5
<b>10</b>	0 441	19685	1 27	1 2	1 2	1 4844	1 4	1 08	1 0	3 4	0 9
<b>11</b>	0 444	19685	4473	4 7	0 42	2 24844	2 4	2 08		0 9	1 9
<b>12</b>	0 447	3 19685	1 4473	1 4 7	1 4	3 4844	3 4	3 08	3	1 9	9
<b>13</b>	0 449	64567	6720	651	0 65	0 69841	0 9	0 657	0 65	9	0 4
<b>14</b>	45	1 64567	1 67	1 65	1 65	1 69841	1 9	1 657	1 65	0 4	1 4
<b>15</b>	455	64567	0 8967	0 876	0 87	69841	9	657	2 65	1 4	4
<b>16</b>	0 458	0 9449	1 14	0 10	0 1	14837	0 3	0 106	10	2 4	3 4
<b>17</b>	0 460	1 9449	1 1 14	1 1 0	1 10	1 14837	1 3	1 106	1 10	3 4	0 8
<b>18</b>	463	2 09449	3461	0 3 5	32	14837	3	2 106	2 10	0 9	1 8
<b>19</b>	0 466	3 9449	1 3461	1 3 5	1 32	3 14837	3 3	3 106	3 10	1 9	2 8
<b>20</b>	0 468	54331	0 57 8	0 549	0 54	0 59834	0 8	0 555	55	9	0 3
<b>21</b>	0 471	1 54331	57 8	1 549	1 54	1 59834	1 8	1 555	1 55	0 4	1 3
<b>22</b>	0 474	54331	0 7955	0 774	0 77	2 59834	2 8	555	55	1 4	3
<b>23</b>	477	3 54331	0	1 774	1 77	0 04830	0	0 0 4	0 0	2 4	3 3
<b>24</b>	0 479	0 99 13	1 020	0 998	0 99	1 0483	1 2	1 004	1 00	3 4	0 7
<b>25</b>	0 482	1 99 13	0 449	0 23	0	2 04830	2	2 004	2 00	0 9	1 7
<b>26</b>	0 485	2 99 13	1 449	1 2 3	1 2	3 0483	3 2	3 004	3 0	1 9	2 7
<b>27</b>	488	0 44095	0 4696	0 447	44	0 49827	0 7	0 453	0 44	9	0 1
<b>28</b>	0 490	1 44095	1 4696	1 447	1 44	1 498 7	1 7	1 453	1 44	0 4	1 1
<b>29</b>	0 493	2 44095	0 6943	0 672	0 67	2 498 7	2 7	2 453	44	1 4	2 1
<b>30</b>	0 496	3 44 95	1 6943	1 67	1 67	3 498 7	1	3 453	3 44	2 4	3 1
<b>July 1</b>	499	0 88977	9190	0 896	0 89	0 948 4	1 1	0 90	89	3 4	0 6
<b>2</b>	0 501	1 88977	1437	1 1	0 1	1 948 4	1	1 90	1 89	0 9	1 6
<b>3</b>	0 504	2 88977	1 1437	1 1	1 1	948 4	3 1	9	89	1 9	6
<b>4</b>	0 5 7	0 33859	0 3684	0 345	0 34	0 3982	0 6	0 351	0 34	9	0 0
<b>5</b>	0 510	1 33859	1 3684	1 345	1 34	1 398 0	1 6	1 351	1 34	0 4	1 0
<b>6</b>	0 512	2 33859	5931	0 569	0 56	398 0	2 6	2 351	34	1 4	0
<b>7</b>	0 515	3 33859	1 5931	1 569	1 56	3 39820	0 0	3 351	3 34	2 4	3 0
<b>8</b>	0 518	0 78741	0 8178	0 794	0 79	0 84817	1 0	0 800	0 79	3 4	0 5
<b>9</b>	0 521	1 78741	0 04 5	0 018	0 01	1 84817	2 0	1 800	1 79	0 9	1 5
<b>10</b>	0 523	78741	1 0425	1 018	1 1	84817	3 0	2 800	2 79	1 9	5
<b>11</b>	0 526	0 3623	0 672	0 43	0 4	9813	0 5	0 249	0 4	9	3 5
<b>12</b>	5 9	1 23623	1 67	1 43	1 4	1 9813	1 5	1 249	1 24	0 4	0 9
<b>13</b>	53	36 3	0 4919	0 467	0 46	2 29813	2 5	2 249	4	1 4	1 9
<b>14</b>	0 534	3 3623	1 49 9	1 467	1 46	3 29813	3 5	3 249	3 4	2 4	2 9
<b>15</b>	0 537	685 4	0 7166	0 69	0 69	0 74810	0 9	0 699	0 69	3 4	0 4
<b>16</b>	0 540	1 68504	1 7166	1 692	1 69	1 7481	1 9	1 699	1 69	0 9	1 4
<b>17</b>	0 54	2 68504	0 9413	0 916	0 91	2 74810	2 9	2 699	2 69	1 9	2 4
<b>18</b>	0 545	0 13386	0 1660	141	0 14	0 19806	0 4	0 148	0 14	2 9	3 4
<b>19</b>	0 548	1 13386	1 1660	1 141	1 14	1 19806	1 4	1 148	1 14	0 4	0 8
<b>20</b>	0 551	13386	0 39 7	0 365	0 36	19806	2 4	2 148	14	1 4	1 8
<b>21</b>	0 553	3 13386	1 39 7	1 365	1 36	3 19806	3 4	3 148	3 14	4	2 8
<b>22</b>	0 556	0 58 68	0 6154	0 59	0 58	0 64803	0 8	0 597	0 59	3 4	3
<b>23</b>	559	1 58268	1 6154	1 590	1 58	1 64803	1 8	1 597	1 59	0 9	1 3
<b>24</b>	56	58 68	0 8401	0 814	0 81	64803	8	597	2 59	1 9	3
<b>25</b>	564	0315	0 648	39	0 3	0 9799	0 3	0 046	0 4	2 9	3 3
<b>26</b>	0 567	1 03150	1 0648	1 039	1 03	1 09799	1 3	1 46	1 4	4	0 7
<b>27</b>	0 570	2 3150	0 894	263	6	9799	3	2 046	0 4	1 4	1 7
<b>28</b>	0 573	3 03150	1 894	1 263	1 6	3 09799	3 3	3 046	3 04	2 4	2 7
<b>29</b>	0 575	0 48032	0 5141	0 488	0 48	0 54796	0 8	0 495	0 48	3 4	0 1

I L p Y d m i l t h d t i O l m s by d y f t F b 8

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Day	Mean Long.	A	B	C	D	E	F	G-J	K	L	M	N	O
	<sup>c</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
<b>July 30</b>	150°07471	6°52311	3°49	1°15	1°383	1°4660	1°476	211°00	0°47	1°09	1°007	1°00	3°17
<b>31</b>	251°44947	0°47219	4°49	2°15	2°383	2°4660	2°476	212°00	1°47	2°09	2°007	2°00	0°59
<b>Aug. 1</b>	352°82424	1°47219	0°98	3°15	3°383	3°4660	3°476	213°00	0°70	3°09	3°007	3°00	1°59
<b>2</b>	94°19900	2°47219	1°98	0°60	0°830	0°9146	0°925	214°00	1°70	0°59	0°507	0°50	2°59
<b>3</b>	195°57376	3°47219	2°98	1°60	1°830	1°9146	1°925	215°00	0°93	1°59	1°507	1°50	0°01
<b>4</b>	296°94852	4°47219	3°98	2°60	2°830	2°9146	2°925	216°00	0°16	2°59	2°507	2°50	1°01
<b>5</b>	38°32328	5°47219	0°47	0°04	0°277	0°3632	0°374	217°00	1°16	0°09	0°007	0°00	2°01
<b>6</b>	139°69804	6°47219	1°47	1°04	1°277	1°3632	1°374	218°00	0°39	1°09	1°007	1°00	3°01
<b>7</b>	241°07281	0°42126	2°47	2°04	2°277	2°3632	2°374	219°00	1°39	2°09	2°007	2°00	0°43
<b>8</b>	342°44757	1°42126	3°47	3°04	3°277	3°3632	3°374	220°00	0°62	3°09	3°007	3°00	1°43
<b>9</b>	83°82233	2°42126	4°47	0°48	0°724	0°8118	0°823	221°00	1°62	0°59	0°508	0°50	2°43
<b>10</b>	185°10709	3°42126	0°96	1°48	1°724	1°8118	1°823	222°00	0°85	1°59	1°508	1°50	3°43
<b>11</b>	286°57185	4°42126	1°96	2°48	2°724	2°8118	2°823	223°00	0°08	2°59	2°508	2°50	0°84
<b>12</b>	27°94661	5°42126	2°96	3°48	0°172	0°2603	0°271	224°00	1°08	0°10	0°008	0°00	1°84
<b>13</b>	129°32138	6°42126	3°96	0°93	1°172	1°2603	1°271	225°00	0°31	1°10	1°008	1°00	2°84
<b>14</b>	230°69614	0°37033	0°45	1°93	2°172	2°2603	2°271	226°00	1°31	2°10	2°008	2°00	0°26
<b>15</b>	332°07090	1°37033	1°45	2°93	3°172	3°2603	3°271	227°00	0°54	3°10	3°008	3°00	1°26
<b>16</b>	73°44566	2°37033	2°45	0°37	0°619	0°7089	0°720	228°00	1°54	0°60	0°508	0°50	2°26
<b>17</b>	174°82042	3°37033	3°45	1°37	1°619	1°7089	1°720	229°00	0°77	1°60	1°508	1°50	3°26
<b>18</b>	276°19518	4°37033	4°45	2°37	2°619	2°7089	2°720	230°00	0°00	2°60	2°508	2°50	0°68
<b>19</b>	17°56995	5°37033	0°94	3°37	0°066	0°1575	0°169	231°00	1°00	0°10	0°008	0°00	1°68
<b>20</b>	118°94471	6°37033	1°94	0°81	1°066	1°1575	1°169	232°00	0°24	1°10	1°008	1°00	2°68
<b>21</b>	220°31947	0°31940	2°94	1°81	2°066	2°1575	2°169	233°00	1°24	2°10	2°008	2°00	0°09
<b>22</b>	321°69423	1°31940	3°94	2°81	3°066	3°1575	3°169	234°00	0°47	3°10	3°008	3°00	1°09
<b>23</b>	63°06899	2°31940	0°42	0°26	0°513	0°6061	0°618	235°00	1°47	0°60	0°508	0°50	2°09
<b>24</b>	164°44375	3°31940	1°42	1°26	1°513	1°6061	1°618	236°00	0°70	1°60	1°508	1°50	3°09
<b>25</b>	265°81852	4°31940	2°42	2°26	2°513	2°6061	2°618	237°00	1°70	2°60	2°508	2°50	0°51
<b>26</b>	7°19328	5°31940	3°42	3°26	3°513	0°0546	0°067	238°00	0°93	0°10	0°008	0°00	1°51
<b>27</b>	108°56804	6°31940	4°42	0°70	0°960	1°0546	1°067	239°00	0°16	1°10	1°008	1°00	2°51
<b>28</b>	209°94280	0°26848	0°91	1°70	1°960	2°0546	2°067	240°00	1°16	2°10	2°008	2°00	3°51
<b>29</b>	311°31756	1°26848	1°91	2°70	2°960	3°0546	3°067	241°00	0°39	3°10	3°008	3°00	0°93
<b>30</b>	52°69232	2°26848	2°91	0°14	0°407	0°5032	0°515	242°00	1°39	0°60	0°508	0°50	1°93
<b>31</b>	154°06709	3°26848	3°91	1°14	1°407	1°5032	1°515	243°00	0°62	1°60	1°508	1°50	2°93
<b>Sept. 1</b>	255°44185	4°26848	0°40	2°14	2°407	2°5032	2°515	244°00	1°62	2°60	2°508	2°50	0°34
<b>2</b>	356°81661	5°26848	1°40	3°14	3°407	3°5032	3°515	245°00	0°85	0°10	0°008	0°00	1°34
<b>3</b>	98°19137	6°26848	2°40	0°59	0°855	0°9518	0°964	246°00	0°08	1°10	1°008	1°00	2°34
<b>4</b>	199°56613	0°21755	3°40	1°59	1°855	1°9518	1°964	247°00	1°08	2°10	2°008	2°00	3°34
<b>5</b>	300°94089	1°21755	4°40	2°59	2°855	2°9518	2°964	248°00	0°31	3°10	3°008	3°00	0°76
<b>6</b>	42°31566	2°21755	0°89	0°03	0°302	0°4004	0°413	249°00	1°31	0°61	0°508	0°50	1°76
<b>7</b>	143°69042	3°21755	1°89	1°03	1°302	1°4004	1°413	250°00	0°54	1°61	1°508	1°50	2°76
<b>8</b>	245°06518	4°21755	2°89	2°03	2°302	2°4004	2°413	251°00	1°54	2°61	2°508	2°50	0°18
<b>9</b>	346°43994	5°21755	3°89	3°03	3°302	3°4004	3°413	252°00	0°77	0°11	0°009	0°00	1°18
<b>10</b>	87°81470	6°21755	0°38	0°47	0°749	0°8489	0°862	253°00	0°01	1°11	1°009	1°00	2°18
<b>11</b>	189°18946	0°16662	1°38	1°47	1°749	1°8489	1°862	254°00	1°01	2°11	2°009	2°00	3°18
<b>12</b>	290°56423	1°16662	2°38	2°47	2°749	2°8489	2°862	255°00	0°24	3°11	3°009	3°00	0°59
<b>13</b>	31°93899	2°16662	3°38	3°47	0°196	0°2975	0°310	256°00	1°24	0°61	0°509	0°50	1°59
<b>14</b>	133°31375	3°16662	4°38	0°92	1°196	1°2975	1°310	257°00	0°47	1°61	1°509	1°50	2°59
<b>15</b>	234°68851	4°16662	0°87	1°92	2°196	2°2975	2°310	258°00	1°47	2°61	2°509	2°50	0°01
<b>16</b>	336°06327	5°16662	1°87	2°92	3°196	3°2975	3°310	259°00	0°70	0°11	0°009	0°00	1°01
<b>17</b>	77°43803	6°16662	2°87	0°36	0°643	0°7461	0°759	260°00	1°70	1°11	1°009	1°00	2°01
<b>18</b>	178°81280	0°11570	3°87	1°36	1°643	1°7461	1°759	261°00	0°93	2°11	2°009	2°00	3°01
<b>19</b>	280°18756	1°11570	0°36	2°36	2°643	2°7461	2°759	262°00	0°16	3°11	3°009	3°00	0°43

In Leap Year diminish the date in Columns 1, 15, by 1 day after Feb. 28.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

X continued Motions of Mean Longitude and the Arguments for Days

5	6	7	8	9				3	4	5	6
Day	P	Q	R	S	T	U	V	W	X	Y	Z
<b>July 30</b>	578	1 48 3	1 5141	1 488	1 48	1 54796	1 8	1 495	1 48	0 9	1 1
<b>31</b>	0 581	4803	0 7388	0 712	0 71	54796	8	495	48	1 9	1
<b>Aug 1</b>	584	3 48032	1 7388	1 71	1 71	3 54796	0	3 495	3 48	9	3 1
<b>2</b>	586	0 92914	0 9635	0 937	0 93	0 9979	1	944	0 93	0 4	0 6
<b>3</b>	0 589	1 92914	0 188	0 161	16	1 99792	2 2	1 944	1 93	1 4	1 6
<b>4</b>	0 59	9 914	1 1882	1 161	1 16	2 99792	3 2	2 944	93	4	2 6
<b>5</b>	0 595	37796	0 4129	0 385	0 38	44789	0 7	0 393	0 38	3 4	0
<b>6</b>	0 597	1 37796	1 41 9	1 385	1 38	1 44789	1 7	1 393	1 38	0 9	1 0
<b>7</b>	0 600	2 37796	0 6376	0 610	0 60	2 44789	2 7	2 393	2 38	1 9	2 0
<b>8</b>	603	3 37796	1 6376	1 610	1 60	3 44789	0 1	3 393	3 38	9	3 0
<b>9</b>	0 605	0 8 678	0 86 3	0 834	0 83	0 89785	1 1	0 84	0 83	0 4	0 5
<b>10</b>	0 608	1 8 678	0 087	0 059	0 05	1 89785	1	1 84	1 83	1 4	1 5
<b>11</b>	0 611	2 8 678	1 0870	1 059	1 05	2 89785	3 1	842	2 83	2 4	5
<b>12</b>	0 614	0 7560	0 3117	0 83	0 28	3478	0 6	91	0 28	3 4	3 5
<b>13</b>	0 616	1 7560	1 3117	1 283	1 28	1 3478	1 6	1 91	1 28	0 9	9
<b>14</b>	619	2 2756	0 5364	508	0 50	2 34782	2 6	2 291	2 8	1 9	1 9
<b>15</b>	0 6 2	3 7560	1 5364	1 508	1 50	3 3478	0 0	3 91	3 28	9	2 9
<b>16</b>	0 6 5	0 72442	0 7611	0 73	0 73	0 79779	1 0	0 740	0 73	0 4	0 4
<b>17</b>	0 6 7	1 7244	1 7611	1 73	1 73	1 79779	2 0	1 740	1 73	1 4	1 4
<b>18</b>	0 630	72442	0 9858	0 957	0 95	2 79779	3 0	740	2 73	2 4	2 4
<b>19</b>	0 633	0 17323	0 21 5	0 181	0 18	0 24775	0 5	189	0 18	3 4	3 4
<b>20</b>	636	1 173 3	1 2105	1 181	1 18	1 24775	1 5	1 189	1 18	0 9	0 8
<b>21</b>	0 638	2 17323	0 435	0 4 6	0 40	2 4775	2 5	2 189	2 18	1 9	1 8
<b>22</b>	641	3 173 3	1 435	1 406	1 40	3 4775	3 5	3 189	3 18	2 9	2 8
<b>23</b>	0 644	0 62205	0 6599	630	0 62	0 6977	0 9	638	0 63	0 4	2
<b>24</b>	647	1 6 05	1 6599	1 63	1 6	1 6977	1 9	1 638	1 63	1 4	1
<b>25</b>	0 649	2 6 205	8846	0 855	0 85	6977	9	638	63	4	2
<b>26</b>	652	0 07087	0 1093	0 079	0 07	14768	0 4	87	0 07	3 4	3
<b>27</b>	0 655	1 07087	1 1093	1 079	1 07	1 14768	1 4	1 087	1 07	0 9	7
<b>28</b>	0 658	2 07087	0 3340	0 304	30	2 14768	2 4	2 087	7	9	1 7
<b>29</b>	0 660	3 7087	1 3340	1 3 4	1 30	3 14768	3 4	3 087	3 07	9	7
<b>30</b>	663	0 51969	5587	0 5 8	0 52	0 59765	8	536	0 5	4	0 1
<b>31</b>	0 666	1 51969	1 5587	1 5 8	1 5	1 59765	1 8	1 536	1 52	1 4	1 1
<b>Sept 1</b>	0 668	2 51969	0 7834	0 753	75	2 59765	8	2 536	2 52	2 4	1
<b>2</b>	0 671	3 51969	0 081	1 753	1 75	0 04761	0 3	3 536	3 5	3 4	3 1
<b>3</b>	674	0 96851	1 081	0 977	0 97	1 4761	1 3	0 985	0 97	9	0 6
<b>4</b>	677	1 96851	0 2328	0 201	2	2 4761	3	1 985	1 97	1 9	1 6
<b>5</b>	0 679	96851	1 3 8	1 1	1 20	3 04761	3 3	985	97	9	2 6
<b>6</b>	0 68	0 41733	4575	0 426	0 4	0 49758	0 7	0 435	4	0 4	0 0
<b>7</b>	0 685	1 41733	1 4575	1 426	1 42	1 49758	1 7	1 435	1 4	1 4	1 0
<b>8</b>	688	2 41733	0 68	650	0 64	49758	7	435	42	4	0
<b>9</b>	0 69	3 41733	1 68	1 650	1 64	3 49758	0	3 435	3 4	3 4	3 0
<b>10</b>	0 693	0 86615	0 9 69	875	0 87	0 94754	1	0 884	0 87	0 9	0 5
<b>11</b>	0 696	1 86615	0 1315	0 099	0 9	1 94754	2 2	1 884	1 87	1 9	1 5
<b>12</b>	699	2 86615	1 1315	1 099	1 09	2 94754	3	884	2 87	2 9	2 5
<b>13</b>	0 701	0 31497	0 3562	0 3 4	3	0 39751	0 7	0 333	0 3	0 4	3 5
<b>14</b>	0 704	1 31497	1 3562	1 3 4	1 32	1 39751	1 7	1 333	1 32	1 4	0 9
<b>15</b>	707	2 31497	5809	0 548	0 54	39751	2 7	333	2 3	4	1 9
<b>16</b>	0 710	3 31497	1 5809	1 548	1 54	3 39751	0 1	3 333	3 32	3 4	2 9
<b>17</b>	0 712	0 76379	0 8056	0 773	0 77	0 84747	1 1	782	0 77	0 9	0 3
<b>18</b>	0 715	1 76379	0 303	1 773	1 77	1 84747	1	1 78	1 77	1 9	1 3
<b>19</b>	0 718	2 76379	1 0303	997	0 99	84747	3 1	2 78	77	2 9	2 3

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# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

**X continued** Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Day	Mean Long.	A	B	C	D	E	F	G-J	K	L	M	N	O
<b>Sept. 20</b>	21°56'23.2	d	d	d	d	d	d	d	d	d	d	d	d
<b>21</b>	122°93'70.8	3°11'57.0	2°36'	0°80'	1°09.1	1°19'47	1°20.8	264°00	0°39	1°61	1°50.9	1°50	2°43
<b>22</b>	224°31'18.4	4°11'57.0	3°36'	1°80'	2°09.1	2°19'47	2°20.8	265°00	1°39	2°61	2°50.9	2°50	3°43
<b>23</b>	325°68'66.0	5°11'57.0	4°36'	2°80'	3°09.1	3°19'47	3°20.8	266°00	0°62	0°11	0°00.9	0°00	0°84
<b>24</b>	67°06'13.7	6°11'57.0	0°85'	0°25'	0°53.8	0°64'33	0°65.7	267°00	1°62	1°11	1°00.9	1°00	1°84
<b>25</b>	168°43'61.3	0°06'47.7	1°85'	1°25'	1°53.8	1°64'33	1°65.7	268°00	0°85	2°11	2°00.9	2°00	2°84
<b>26</b>	269°81'08.9	1°06'47.7	2°85'	2°25'	2°53.8	2°64'33	2°65.7	269°00	0°08	3°11	3°00.9	3°00	0°26
<b>27</b>	11°18'56.5	2°06'47.7	3°85'	3°25'	3°53.8	0°09'18	0°10.5	270°00	1°08	0°61	0°50.9	0°50	1°26
<b>28</b>	112°56'04.1	3°06'47.7	0°34'	0°69'	0°98.5	1°09'18	1°10.5	271°00	0°31	1°61	1°50.9	1°50	2°26
<b>29</b>	213°93'51.7	4°06'47.7	1°34'	1°69'	1°98.5	2°09'18	2°10.5	272°00	1°31	2°61	2°50.9	2°50	3°26
<b>30</b>	315°30'99.4	5°06'47.7	2°34'	2°69'	2°98.5	3°09'18	3°10.5	273°00	0°54	0°12	0°00.9	0°00	0°68
<b>Oct. 1</b>	56°68'47.0	6°06'47.7	3°34'	0°13'	0°43.2	0°54'04	0°55.4	274°00	1°54	1°12	1°00.9	1°00	1°68
<b>2</b>	158°05'94.6	0°01'38.4	4°34'	1°13'	1°43.2	1°54'04	1°55.4	275°00	0°77	2°12	2°00.9	2°00	2°68
<b>3</b>	259°43'42.2	1°01'38.4	0°82'	2°13'	2°43.2	2°54'04	2°55.4	276°00	0°01	3°12	3°00.9	3°00	0°09
<b>4</b>	0°80'89.8	2°01'38.4	1°82'	3°13'	3°43.2	3°54'04	0°00.3	277°00	1°01	0°62	0°50.9	0°50	1°09
<b>5</b>	102°18'37.4	3°01'38.4	2°82'	0°58'	0°87.9	0°98'90	1°00.3	278°00	0°24	1°62	1°50.9	1°50	2°09
<b>6</b>	203°55'85.1	4°01'38.4	3°82'	1°58'	1°87.9	1°98'90	2°00.3	279°00	1°24	2°62	2°50.9	2°50	3°09
<b>7</b>	304°93'32.7	5°01'38.4	0°31'	2°58'	2°87.9	2°98'90	3°00.3	280°00	0°47	0°12	0°01.0	0°00	0°51
<b>8</b>	46°30'80.3	6°01'38.4	1°31'	0°02'	0°32.6	0°43'76	0°45.2	281°00	1°47	1°12	1°01.0	1°00	1°51
<b>9</b>	147°68'27.9	7°01'38.4	2°31'	1°02'	1°32.6	1°43'76	1°45.2	282°00	0°70	2°12	2°01.0	2°00	2°51
<b>10</b>	249°05'57.5	0°96'29.1	3°31'	2°02'	2°32.6	2°43'76	2°45.2	283°00	1°70	3°12	3°01.0	3°00	3°51
<b>11</b>	350°43'23.1	1°96'29.1	4°31'	3°02'	3°32.6	3°43'76	3°45.2	284°00	0°93	0°62	0°51.0	0°50	0°93
<b>12</b>	91°80'70.8	2°96'29.1	0°80'	0°46'	0°77.4	0°88'61	0°90.0	285°00	0°16	1°62	1°51.0	1°50	1°93
<b>13</b>	193°18'18.4	3°96'29.1	1°80'	1°46'	1°77.4	1°88'61	1°90.0	286°00	1°16	2°62	2°51.0	2°50	2°93
<b>14</b>	294°55'66.0	4°96'29.1	2°80'	2°46'	2°77.4	2°88'61	2°90.0	287°00	0°39	0°12	0°01.0	0°00	0°34
<b>15</b>	35°93'13.6	5°96'29.1	3°80'	3°46'	0°22.1	0°33'47	0°34.9	288°00	1°39	1°12	1°01.0	1°00	1°34
<b>16</b>	137°30'61.2	6°96'29.1	0°29'	0°91'	1°22.1	1°33'47	1°34.9	289°00	0°62	2°12	2°01.0	2°00	2°34
<b>17</b>	238°68'08.8	0°91'19.9	1°29'	1°91'	2°22.1	2°33'47	2°34.9	290°00	1°62	3°12	3°01.0	3°00	3°34
<b>18</b>	340°05'56.5	1°91'19.9	2°29'	2°91'	3°22.1	3°33'47	3°34.9	291°00	0°85	0°62	0°51.0	0°50	0°76
<b>19</b>	81°43'04.1	2°91'19.9	3°29'	0°35'	0°66.8	0°78'33	0°79.8	292°00	0°08	1°62	1°51.0	1°50	1°76
<b>20</b>	182°80'51.7	3°91'19.9	4°29'	1°35'	1°66.8	1°78'33	1°79.8	293°00	1°08	2°62	2°51.0	2°50	2°76
<b>21</b>	284°17'99.3	4°91'19.9	0°78'	2°35'	2°66.8	2°78'33	2°79.8	294°00	0°31	0°12	0°01.0	0°00	0°18
<b>22</b>	25°55'46.9	5°91'19.9	1°78'	3°35'	0°11.5	0°23'19	0°24.7	295°00	1°31	1°12	1°01.0	1°00	1°18
<b>23</b>	126°92'94.5	6°91'19.9	2°78'	0°79'	1°11.5	1°23'19	1°24.7	296°00	0°54	2°12	2°01.0	2°00	2°18
<b>24</b>	228°30'42.2	0°86'10.6	3°78'	1°79'	2°11.5	2°23'19	2°24.7	297°00	1°54	3°12	3°01.0	3°00	3°18
<b>25</b>	329°67'89.8	1°86'10.6	0°27'	2°79'	3°11.5	3°23'19	3°24.7	298°00	0°78	0°63	0°51.0	0°50	0°59
<b>26</b>	71°05'37.4	2°86'10.6	1°27'	0°24'	0°56.2	0°68'04	0°69.5	299°00	0°01	1°63	1°51.0	1°50	1°59
<b>27</b>	172°42'85.0	3°86'10.6	2°27'	1°24'	1°56.2	1°68'04	1°69.5	300°00	1°01	2°63	2°51.0	2°50	2°59
<b>28</b>	273°80'32.6	4°86'10.6	3°27'	2°24'	2°56.2	2°68'04	2°69.5	301°00	0°24	0°13	0°01.0	0°00	0°01
<b>29</b>	15°17'80.2	5°86'10.6	4°27'	3°24'	0°00.9	0°12'90	0°14.4	302°00	1°24	1°13	1°01.0	1°00	1°01
<b>30</b>	116°55'27.9	6°86'10.6	0°76'	0°68'	1°00.9	1°12'90	1°14.4	303°00	0°47	2°13	2°01.0	2°00	2°01
<b>Nov. 1</b>	217°92'75.5	0°81'01.3	1°76'	1°68'	2°00.9	2°12'90	2°14.4	304°00	1°47	3°13	3°01.0	3°00	3°01
<b>2</b>	319°30'23.1	1°81'01.3	2°76'	2°68'	3°00.9	3°12'90	3°14.4	305°00	0°70	0°63	0°51.0	0°50	0°43
<b>3</b>	60°67'70.7	2°81'01.3	3°76'	0°12'	0°45.7	0°57'76	0°59.3	306°00	1°70	1°63	1°51.0	1°50	1°43
<b>4</b>	162°05'18.3	3°81'01.3	0°25'	1°12'	1°45.7	1°57'76	1°59.3	307°00	0°93	2°63	2°51.0	2°50	2°43
<b>5</b>	263°42'65.9	4°81'01.3	1°25'	2°12'	2°45.7	2°57'76	2°59.3	308°00	0°16	0°13	0°01.1	0°00	3°43
<b>6</b>	4°80'13.6	5°81'01.3	2°25'	3°12'	3°45.7	0°02'62	0°04.2	309°00	1°16	1°13	1°01.1	1°00	0°85
<b>7</b>	106°17'61.2	6°81'01.3	3°25'	0°57'	0°90.4	1°02'62	1°04.2	310°00	0°39	2°13	2°01.1	2°00	1°85
<b>8</b>	207°55'08.8	0°75'92.1	4°25'	1°57'	1°90.4	2°02'62	2°04.2	311°00	1°39	3°13	3°01.1	3°00	2°85
<b>9</b>	308°92'56.4	1°75'92.1	0°74'	2°57'	2°90.4	3°02'62	3°04.2	312°00	0°62	0°63	0°51.1	0°50	0°26
<b>10</b>	50°30'04.0	2°75'92.1	1°74'	0°01'	0°35.1	0°47'48	0°49.0	313°00	1°62	1°63	1°51.1	1°50	1°26
<b>11</b>	151°67'51.7	3°75'92.1	2°74'	1°01'	1°35.1	1°47'48	1°49.0	314°00	0°85	2°63	2°51.1	2°50	2°26

In Leap Year diminish the date in Columns 1, 15, by 1 day after Feb. 28.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

**X continued** Motions of Mean Longitude and the Arguments for Days

5	6	7	8	9				3	4	5	6
Day	P	Q	R	S	T	U	V	W	X	Y	Z
	y	d				d	d	d	d	d	d
<b>Sept 20</b>	721	0 1 61	0 2550	0 2	0 1	0 9744	0 6	0 31	0 22	0 4	3 3
<b>21</b>	0 723	1 1 61	1 2550	1	1 1	1 9744	1 6	1 31	1	1 4	0 8
<b>22</b>	0 7 6	2 21 61	0 4797	0 446	0 44	2 9744	6	31		2 4	1 8
<b>23</b>	0 729	3 1 61	1 4797	1 446	1 44	3 29744	0 0	3 31	3	3 4	2 8
<b>24</b>	0 73	0 6614	0 7 44	671	0 66	0 74740	1 0	0 680	67	0 9	2
<b>25</b>	734	1 6614	1 7044	1 671	1 66	1 74740		1 680	1 67	1 9	1
<b>26</b>	0 737	6614	0 9 91	0 895	0 89	74740	3 0	680	67	2 9	
<b>27</b>	0 74	11 4	0 1538	1 0	0 11	0 19737	5	1 9	0 11	0 4	3
<b>28</b>	0 74	1 11024	1 538	1 12	1 11	1 19737	15	1 129	1 11	1 4	7
<b>29</b>	0 745	11 4	0 3785	0 344	0 34	2 19737	25	2 129	11	2 4	17
<b>Oct 30</b>	748	3 110 4	3785	1 344	1 34	3 19737	35	3 1 9	3 11	3 4	27
<b>1</b>	751	0 55906	0 603	0 569	0 56	0 64734	0 9	578	0 56	0 9	0 1
<b>2</b>	753	559 6	1 603	1 569	1 56	1 64734	1 9	1 578	1 56	1 9	1 1
<b>3</b>	0 756	2 559 6	0 8 79	0 793	79	2 64734	9	578	56	9	1
<b>4</b>	0 59	0 0 788	05 6	017	0 01	9730	0 4	0 0 7	0 1	0 4	3 1
<b>5</b>	0 762	1 788	1 05 6	1 017	1 01	1 09730	1 4	1 0 7	1 01	1 4	0 6
<b>6</b>	764	0 788	0 2773	0 24	0 23	0 9730	4	0 27	2 01	4	1 6
<b>7</b>	0 767	3 00788	1 773	1 24	1 23	3 9730	3 4	3 027	3 01	3 4	2 6
<b>8</b>	0 770	0 45670	0 50 0	0 466	0 46	0 54727	8	0 476	0 46	0 9	0 0
<b>9</b>	0 773	1 45670	5020	1 466	1 46	1 547 7	1 8	1 476	1 46	1 9	1 0
<b>10</b>	0 775	2 45670	0 7 67	0 691	0 68	2 547 7	2 8	476	46	9	2 0
<b>11</b>	778	3 45670	1 7 67	1 691	1 68	3 54727	0 3	3 476	3 46	0 4	3 0
<b>12</b>	0 781	0 9055	0 9514	915	0 91	0 99723	1 3	0 9 5	0 91	1 4	0 4
<b>13</b>	0 784	1 9055	0 1761	0 140	0 13	1 99723	3	1 9 5	1 91	2 4	1 4
<b>14</b>	0 786	9 552	1 1761	1 140	1 13	997 3	3 3	2 9 5	91	3 4	4
<b>15</b>	0 789	0 35434	4 08	0 364	0 36	0 44720	0 7	0 374	0 36	0 9	3 4
<b>16</b>	0 79	1 35434	1 4 8	1 364	1 36	1 44720	1 7	1 374	1 36	1 9	0 9
<b>17</b>	795	35434	0 6 55	0 589	58	447 0	2 7	374	2 36	2 9	1 9
<b>18</b>	0 797	3 35434	1 6 55	1 589	1 58	3 447 0		3 374	3 36	0 4	2 9
<b>19</b>	0 800	0 80316	0 8502	0 813	0 81	0 89716	1	0 823	0 81	1 4	0 3
<b>20</b>	0 803	1 8 316	0 0749	0 38	0 3	1 89716	2	1 8 3	1 81	2 4	1 3
<b>21</b>	0 805	80316	1 0749	1 38	1 03	89716	3 2	8 3	2 81	3 4	3
<b>22</b>	0 808	0 5198	0 996	0 6	0 5	34713	0 6	0 27	0 6	0 9	3 3
<b>23</b>	0 811	1 5198	1 2996	1 62	1 5	1 34713	1 6	1 72	1 26	1 9	0 8
<b>24</b>	0 814	5198	0 5243	0 487	0 48	2 34713	2 6	2 7	2 6	2 9	1 8
<b>25</b>	0 816	3 5198	1 5 43	1 487	1 48	3 34713	0 1	3 272	3 26	0 4	2 8
<b>26</b>	0 819	0 7 80	0 7489	0 711	0 70	0 797 9	1 1	0 7 1	0 71	1 4	0
<b>27</b>	0 8	1 7 08	1 7489	1 711	1 70	1 79709	2 1	1 721	1 71	4	1 2
<b>28</b>	8 5	70080	0 9736	0 936	0 93	79709	3 1	2 7 1	2 71	3 4	2 2
<b>29</b>	0 8 7	14961	0 1983	0 160	0 15	0 247 6	0 5	0 170	0 15	0 9	3 2
<b>30</b>	0 830	1 14961	1 1983	1 16	1 15	1 4706	1 5	1 170	1 15	1 9	0 7
<b>31</b>	0 833	14961	0 4 30	0 385	0 38	2 4706	2 5	2 17	2 15	9	1 7
<b>Nov 1</b>	0 836	3 14961	1 4 3	1 385	1 38	3 4706	0 0	3 170	3 15	0 4	2 7
<b>2</b>	0 838	59843	0 6477	0 609	0 60	0 69702	1 0	620	0 60	1 4	1
<b>3</b>	0 841	1 59843	1 6477	1 609	1 60	1 69702	2 0	1 620	1 60	4	1 1
<b>4</b>	0 844	2 59843	0 8724	833	0 83	6970	3 0	2 6 0	2 60	3 4	2 1
<b>5</b>	0 847	0 4725	0 971	0 58	0 05	0 14699	0 5	0 069	5	0 9	3 1
<b>6</b>	0 849	1 047 5	1 0971	1 058	1 05	1 14699	1 5	1 69	1 05	1 9	0 5
<b>7</b>	0 85	0 47 5	0 3 18	0 8	0 27	14699	2 5	2 069	05	9	1 5
<b>8</b>	0 855	3 04725	1 3 18	1 28	1 7	3 14699	3 5	3 069	3 05	0 4	5
<b>9</b>	0 858	0 49607	0 5465	0 507	0 50	0 59696	0 9	0 518	0 50	1 4	0 0
<b>10</b>	0 860	1 49607	1 5465	1 507	1 50	1 59696	1 9	1 518	1 50	2 4	1 0

I L p Y dimi i h t d t e i C l m by d y f t F b 8

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Day	Mean Long.	A	B	C	D	E	F	G-J	K	L	M	N	O
	°	d	d	d	d	d	d	d	d	d	d	d	d
<b>Nov. 11</b>	253°04993	4'75921	3'74	2'01	2'351	2'4748	2'490	315'00	0'08	0'13	0'011	0'00	3'26
<b>12</b>	354'42469	5'75921	0'22	3'01	3'351	3'4748	3'490	316'00	1'08	1'13	1'011	1'00	0'68
<b>13</b>	95'79945	6'75921	1'22	0'45	0'798	0'9233	0'939	317'00	0'31	2'13	2'011	2'00	1'68
<b>14</b>	197'17421	0'70828	2'22	1'45	1'798	1'9233	1'939	318'00	1'31	3'13	3'011	3'00	2'68
<b>15</b>	298'54897	1'70828	3'22	2'45	2'798	2'9233	2'939	319'00	0'54	0'64	0'511	0'50	0'10
<b>16</b>	39'92374	2'70828	4'22	3'45	0'245	0'3719	0'388	320'00	1'54	1'64	1'511	1'50	1'10
<b>17</b>	141'29850	3'70828	0'71	0'90	1'245	1'3719	1'388	321'00	0'78	2'64	2'511	2'50	2'10
<b>18</b>	242'67326	4'70828	1'71	1'90	2'245	2'3719	2'388	322'00	0'01	0'14	0'011	0'00	3'10
<b>19</b>	344'04802	5'70828	2'71	2'90	3'245	3'3719	3'388	323'00	1'01	1'14	1'011	1'00	0'51
<b>20</b>	85'42278	6'70828	3'71	0'34	0'692	0'8205	0'837	324'00	0'24	2'14	2'011	2'00	1'51
<b>21</b>	186'79754	0'65735	0'20	1'34	1'692	1'8205	1'837	325'00	1'24	3'14	3'011	3'00	2'51
<b>22</b>	288'17231	1'65735	1'20	2'34	2'692	2'8205	2'837	326'00	0'47	0'64	0'511	0'50	3'51
<b>23</b>	29'54707	2'65735	2'20	3'34	0'140	0'2691	0'285	327'00	1'47	1'64	1'511	1'50	0'93
<b>24</b>	130'92183	3'65735	3'20	0'78	1'140	1'2691	1'285	328'00	0'70	2'64	2'511	2'50	1'93
<b>25</b>	232'29659	4'65735	4'20	1'78	2'140	2'2691	2'285	329'00	1'70	0'14	0'011	0'00	2'93
<b>26</b>	333'67135	5'65735	0'69	2'78	3'140	3'2691	3'285	330'00	0'93	1'14	1'011	1'00	0'35
<b>27</b>	75'04611	6'65735	1'69	0'22	0'587	0'7176	0'734	331'00	0'16	2'14	2'011	2'00	1'35
<b>28</b>	176'42088	0'60642	2'69	1'22	1'587	1'7176	1'734	332'00	1'16	3'14	3'011	3'00	2'35
<b>29</b>	277'79564	1'60642	3'69	2'22	2'587	2'7176	2'734	333'00	0'39	0'64	0'511	0'49	3'35
<b>30</b>	19'17040	2'60642	0'18	3'22	0'034	0'1662	0'183	334'00	1'39	1'64	1'511	1'49	0'76
<b>Dec. 1</b>	120'54516	3'60642	1'18	0'67	1'034	1'1662	1'183	335'00	0'62	2'64	2'511	2'49	1'76
<b>2</b>	221'91992	4'60642	2'18	1'67	2'034	2'1662	2'183	336'00	1'62	0'14	0'011	3'49	2'76
<b>3</b>	323'29468	5'60642	3'18	2'67	3'034	3'1662	3'183	337'00	0'85	1'14	1'011	0'99	0'18
<b>4</b>	64'66945	6'60642	4'18	0'11	0'481	0'6148	0'632	338'00	0'08	2'14	2'011	1'99	1'18
<b>5</b>	166'04421	0'55550	0'67	1'11	1'481	1'6148	1'632	339'00	1'08	3'14	3'011	2'99	2'18
<b>6</b>	267'41897	1'55550	1'67	2'11	2'481	2'6148	2'632	340'00	0'31	0'64	0'512	0'49	3'18
<b>7</b>	8'79373	2'55550	2'67	3'11	3'481	0'0634	0'080	341'00	1'31	1'64	1'512	1'49	0'60
<b>8</b>	110'16849	3'55550	3'67	0'55	0'928	1'0634	1'080	342'00	0'55	2'64	2'512	2'49	1'60
<b>9</b>	211'54325	4'55550	0'16	1'55	1'928	2'0634	2'080	343'00	1'55	0'15	0'012	3'49	2'60
<b>10</b>	312'91802	5'55550	1'16	2'55	2'928	3'0634	3'080	344'00	0'78	1'15	1'012	0'99	0'01
<b>11</b>	54'29278	6'55550	2'16	0'00	0'375	0'5119	0'529	345'00	0'01	2'15	2'012	1'99	1'01
<b>12</b>	155'66754	0'50457	3'16	1'00	1'375	1'5119	1'529	346'00	1'01	3'15	3'012	2'99	2'01
<b>13</b>	257'04230	1'50457	4'16	2'00	2'375	2'5119	2'529	347'00	0'24	0'65	0'512	0'49	3'01
<b>14</b>	358'41706	2'50457	0'65	3'00	3'375	3'5119	3'529	348'00	1'24	1'65	1'512	1'49	0'43
<b>15</b>	99'79182	3'50457	1'65	0'44	0'823	0'9605	0'978	349'00	0'47	2'65	2'512	2'49	1'43
<b>16</b>	201'16659	4'50457	2'65	1'44	1'823	1'9605	1'978	350'00	1'47	0'15	0'012	3'49	2'43
<b>17</b>	302'54135	5'50457	3'65	2'44	2'823	2'9605	2'978	351'00	0'70	1'15	1'012	0'99	3'43
<b>18</b>	43'91611	6'50457	0'14	3'44	0'270	0'4091	0'427	352'00	1'70	2'15	2'012	1'99	0'85
<b>19</b>	145'29087	0'45364	1'14	0'88	1'270	1'4091	1'427	353'00	0'93	3'15	3'012	2'99	1'85
<b>20</b>	246'66563	1'45364	2'14	1'88	2'270	2'4091	2'427	354'00	0'16	0'65	0'512	0'49	2'85
<b>21</b>	348'04039	2'45364	3'14	2'88	3'270	3'4091	3'427	355'00	1'16	1'65	1'512	1'49	0'26
<b>22</b>	89'41516	3'45364	4'14	0'33	0'717	0'8577	0'875	356'00	0'39	2'65	2'512	2'49	1'26
<b>23</b>	190'78992	4'45364	0'63	1'33	1'717	1'8577	1'875	357'00	1'39	0'15	0'012	3'49	2'26
<b>24</b>	292'16468	5'45364	1'63	2'33	2'717	2'8577	2'875	358'00	0'62	1'15	1'012	0'99	3'26
<b>25</b>	33'53944	6'45364	2'63	3'33	0'164	0'3063	0'324	359'00	1'62	2'15	2'012	1'99	0'68
<b>26</b>	134'91420	0'40272	3'63	0'77	1'164	1'3063	1'324	360'00	0'85	3'15	3'012	2'99	1'68
<b>27</b>	236'28896	1'40272	0'11	1'77	2'164	2'3063	2'324	361'00	0'08	0'65	0'512	0'49	2'68
<b>28</b>	337'66373	2'40272	1'11	2'77	3'164	3'3063	3'324	362'00	1'08	1'65	1'512	1'49	0'10
<b>29</b>	79'03849	3'40272	2'11	0'21	0'611	0'7548	0'773	363'00	0'31	2'65	2'512	2'49	1'10
<b>30</b>	180'41325	4'40272	3'11	1'21	1'611	1'7548	1'773	364'00	1'31	0'15	0'012	3'49	2'10
<b>31</b>	281'78801	5'40272	4'11	2'21	2'611	2'7548	2'773	365'00	0'55	1'15	1'012	0'99	3'10
<b>32</b>	23'16277	6'40272	0'60	3'21	0'058	0'2034	0'222	366'00	1'55	2'15	2'012	1'99	0'51

In Leap Year diminish the date in Columns 1, 15, by 1 day after Feb. 28.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

5	6	7	8	9				3	4	5	6
Day	P	Q	R	S	T	U	V	W	X	Y	Z
<b>Nov</b>			l	d			l				d
11	863	49607	0 771	0 731	72	59696	9	2 518	2 50	3 4	2
12	0 866	3 49607	1 7712	1 731	1 72	0 0469	0 4	3 518	3 50	0 9	3 0
13	0 868	0 94489	0 9959	0 956	0 95	1 0469	1 4	967	0 95	1 9	0 4
14	0 871	1 94489	0 2206	0 180	0 17	0 469	2 4	1 967	1 95	2 9	1 4
15	0 874	2 94489	1 2 6	1 180	1 17	3 0469	3 4	967	95	0 4	2 4
16	877	0 39371	0 4453	0 405	0 40	0 49689	0 8	0 416	0 40	1 4	3 4
17	0 879	1 39371	1 4453	1 4 5	1 4	1 49689	1 8	1 416	1 40	2 4	0 9
18	88	2 39371	6700	0 6 9	0 6	49689	8	2 416	40	3 4	1 9
19	0 885	3 39371	1 6700	1 629	1 6	3 49689	0 3	3 416	3 40	0 9	2 9
20	888	0 84253	0 8947	0 854	0 85	0 94685	1 3	0 865	0 85	1 9	0 3
21	890	1 84 53	0 1194	0 078	0 07	1 94685	3	1 865	1 85	2 9	1 3
22	0 893	2 84 53	1 1194	1 078	1 07	94685	3 3	2 865	2 85	0 4	2 3
23	0 896	0 9135	0 3441	0 303	0 9	0 3968	0 7	0 314	0 30	1 4	3 3
24	0 899	1 29135	1 3441	1 303	1 9	1 3968	1 7	1 314	1 30	2 4	0 8
25	9 1	9135	0 5688	0 527	0 52	39682	2 7	314	2 30	3 4	1 8
26	0 904	3 9135	1 5688	1 527	1 5	3 3968	0	3 314	3 30	0 9	2 8
27	0 907	74017	0 7935	0 75	0 74	0 84678	1	0 763	0 75	1 9	0 2
28	0 910	1 74017	0 018	1 752	1 74	1 84678	2 2	1 763	1 75	2 9	1 2
29	0 912	74017	1 0182	0 976	0 97	2 84678	3 2	763	2 75	0 4	2 2
30	0 915	0 18899	0 2429	0 201	0 19	0 29675	0 6	0 21	0 19	1 4	3 2
<b>Dec</b>											
1	918	1 18899	1 429	1 01	1 19	1 9675	1 6	1 212	1 19	2 4	0 6
2	0 921	2 18899	0 4676	0 425	0 42	2 9675	2 6	2 212	2 19	3 4	1 6
3	0 923	3 18899	1 4676	1 4 5	1 42	3 9675	0 1	3 21	3 19	0 9	2 6
4	0 926	0 63780	0 69 3	0 649	0 64	0 74671	1 1	0 661	0 64	1 9	0 1
5	0 9 9	1 63780	1 69 3	1 649	1 64	1 74671	2 1	1 661	1 64	2 9	1 1
6	0 93	63780	0 9170	0 874	0 87	2 74671	3 1	2 661	2 64	0 4	2 1
7	0 934	0 08662	0 1417	0 098	9	0 19668	0 5	0 110	0 09	1 4	3 1
8	0 937	1 0866	1 1417	1 098	1 09	1 19668	1 5	1 110	1 09	2 4	0 5
9	0 940	0 8662	0 3664	0 323	0 31	1 9668	2 5	2 110	0 9	3 4	1 5
10	0 942	3 0866	1 3664	1 3 3	1 31	3 19668	0 0	3 110	3 09	9	2 5
11	0 945	53544	0 5910	0 547	0 54	0 64664	1 0	0 559	0 54	1 9	0 0
12	0 948	1 53544	1 5910	1 547	1 54	1 64664	0	1 559	1 54	2 9	1 0
13	0 951	53544	8157	0 77	0 76	2 64664	3 0	2 559	54	0 4	2 0
14	0 953	3 53544	0 0404	1 772	1 76	0 09661	0 4	0 008	3 54	1 4	3 0
15	0 956	0 98426	1 0404	0 996	0 99	1 09661	1 4	1 008	0 99	2 4	0 4
16	0 959	1 98426	0 651	0 221	0 21	2 09661	2 4	2 008	1 99	3 4	1 4
17	0 962	2 98426	1 2651	1 221	1 21	3 09661	3 4	3 008	2 99	0 9	2 4
18	0 964	0 43308	0 4898	0 445	0 44	0 54657	0 9	0 457	0 44	1 9	3 4
19	0 967	1 43308	1 4898	1 445	1 44	1 54657	1 9	1 457	1 44	2 9	0 9
20	0 970	2 43308	0 7145	0 670	0 66	2 54657	2 9	2 457	2 44	0 4	1 9
21	0 973	3 43308	1 7145	1 670	1 66	3 54657	0 4	3 457	3 44	1 4	2 9
22	975	0 88190	0 939	894	88	0 99654	1 4	0 906	0 89	2 4	0 3
23	0 978	1 88190	0 1639	0 119	0 11	1 99654	2 4	1 906	1 89	3 4	1 3
24	0 981	2 88190	1 1639	1 119	1 11	2 99654	3 4	906	89	0 9	2 3
25	0 984	0 3307	0 3886	0 343	0 33	0 44650	0 8	0 356	0 34	1 9	3 3
26	0 986	1 33072	1 3886	1 343	1 33	1 4465	1 8	1 356	1 34	2 9	0 7
27	0 989	2 3307	0 6133	0 568	0 56	44650	2 8	2 356	2 34	0 4	1 7
28	0 992	3 33 72	1 6133	1 568	1 56	3 44650	0 3	3 356	3 34	1 4	2 7
29	0 995	0 77954	0 8380	0 792	0 78	89646	1 3	8 5	0 79	2 4	0 2
30	0 997	1 77954	0 0627	0 017	0 01	1 89646	2 3	1 8 5	1 79	3 4	1 2
31	1 000	2 77954	1 0627	1 017	1 01	89646	3 3	805	2 79	0 9	2
32	1 0 3	0 2 836	0 2874	0 241	0 23	34643	0 7	0 254	0 23	1 9	3 2

I L pY dimi i hth dat i C l m by d y fte F b 8

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

**XI**

**Motion of Mean Longitude for Parts of a Day**

1	2	1	2
Days	Mean Long.	Days	Mean Long.
d	o	d	o
0·01	1·01375	0·51	51·70113
0·02	2·02750	0·52	52·71488
0·03	3·04124	0·53	53·72862
0·04	4·05499	0·54	54·74237
0·05	5·06874	0·55	55·75612
0·06	6·08249	0·56	56·76987
0·07	7·09623	0·57	57·78361
0·08	8·10998	0·58	58·79736
0·09	9·12373	0·59	59·81111
0·10	10·13748	0·60	60·82486
0·11	11·15122	0·61	61·83860
0·12	12·16497	0·62	62·85235
0·13	13·17872	0·63	63·86610
0·14	14·19247	0·64	64·87985
0·15	15·20621	0·65	65·89360
0·16	16·21996	0·66	66·90734
0·17	17·23371	0·67	67·92109
0·18	18·24746	0·68	68·93484
0·19	19·26120	0·69	69·94859
0·20	20·27495	0·70	70·96233
0·21	21·28870	0·71	71·97608
0·22	22·30245	0·72	72·98983
0·23	23·31620	0·73	73·00358
0·24	24·32994	0·74	74·01732
0·25	25·34369	0·75	75·03107
0·26	26·35744	0·76	76·04482
0·27	27·37119	0·77	77·05857
0·28	28·38493	0·78	78·07231
0·29	29·39868	0·79	79·08606
0·30	30·41243	0·80	80·09981
0·31	31·42618	0·81	81·11356
0·32	32·43992	0·82	82·12730
0·33	33·45367	0·83	83·14105
0·34	34·46742	0·84	84·15480
0·35	35·48117	0·85	85·16855
0·36	36·49491	0·86	86·18230
0·37	37·50866	0·87	87·19604
0·38	38·52241	0·88	88·20979
0·39	39·53616	0·89	89·22354
0·40	40·54990	0·90	90·23729
0·41	41·56365	0·91	91·25103
0·42	42·57740	0·92	92·26478
0·43	43·59115	0·93	93·27853
0·44	44·60490	0·94	94·29228
0·45	45·61864	0·95	95·30602
0·46	46·63239	0·96	96·31977
0·47	47·64614	0·97	97·33352
0·48	48·65989	0·98	98·34727
0·49	49·67363	0·99	99·36101
0·50	50·68738	1·00	101·37476

3	4	3	4
Days	Mean Long.	Days	Mean Long.
d	o	d	o
0·0001	0·01014	0·0051	0·51701
2	0·02027	52	52·715
3	0·03041	53	53·729
4	0·04055	54	54·742
5	0·05069	55	55·756
0·0006	0·06083	0·0056	0·56770
7	0·07096	57	57·784
8	0·08110	58	58·797
9	0·09124	59	59·811
10	0·10137	60	60·825
0·0011	0·11151	0·0061	0·61839
12	0·12165	62	62·852
13	0·13179	63	63·866
14	0·14192	64	64·880
15	0·15206	65	65·894
0·0016	0·16220	0·0066	0·66907
17	0·17234	67	67·921
18	0·18247	68	68·935
19	0·19261	69	69·949
20	0·20275	70	70·962
0·0021	0·21289	0·0071	0·71976
22	0·22302	72	72·990
23	0·23316	73	73·004
24	0·24330	74	74·017
25	0·25344	75	75·031
0·0026	0·26357	0·0076	0·76045
27	0·27371	77	77·059
28	0·28385	78	78·072
29	0·29399	79	79·086
30	0·30412	80	80·099
0·0031	0·31426	0·0081	0·81114
32	0·32440	82	82·127
33	0·33454	83	83·141
34	0·34467	84	84·155
35	0·35481	85	85·169
0·0036	0·36495	0·0086	0·86182
37	0·37509	87	87·196
38	0·38522	88	88·210
39	0·39536	89	89·224
40	0·40550	90	90·237
0·0041	0·41564	0·0091	0·91251
42	0·42577	92	92·265
43	0·43591	93	93·279
44	0·44605	94	94·292
45	0·45619	95	95·306
0·0046	0·46632	0·0096	0·96320
47	0·47646	97	97·334
48	0·48660	98	98·347
49	0·49674	99	99·361
50	0·50687	0·0100	1·01375

For the Arguments A—Z (omitting P), the fraction of a day must be added to the sum of the entries taken from Tables IX, X.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XII

Equation of Longitude

Argument A

A	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	A	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	A	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	A	Equation	$\Delta$	$\frac{1}{2}\Delta^2$
<sup>d</sup> 0 00	1 7500	+1934	0	<sup>d</sup> 0 50	1 91 74	+1185	-13	1 00	1 1128	-434	-16	1 50	1 53916	-170	-8
01	1 9434	1934	-1	51	1 9 446	1158	15	01	2 10678	467	18	51	1 5 08	1715	7
02	1 11367	1932	1	52	1 93589	11 8	16	02	2 10194	500	16	52	1 50486	17 9	7
03	1 13 98	193	1	53	1 94701	1099	13	03	09678	53	16	53	1 48751	1742	7
04	15 8	1929	1	54	1 95787	107	15	04	2 913	565	17	54	1 47 0	1756	7
05	1 17156	19 6		55	1 96844	1043	15	05	08549	597	16	55	1 45 40	1768	6
0 06	1 19 8	+19 3	-	0 56	1 9787	+1014	-15	1 06	2 07937	-6 9	-16	1 56	1 43467	-1778	-5
07	1 1001	1918	3	57	1 98871	984	16	07	2 07293	66	16	57	1 41684	1789	6
08	1 915	191	3	58	1 99839	953	15	08	06618	691	16	58	1 39889	1800	5
09	48 4	1907		59	00777	92	16	09	05911	7 4	16	59	1 38084	1810	5
10	1 673	19	4	60	01683	892	15	10	2 05173	754	16	60	1 36269	1820	5
0 11	1 8628	+1895	-4	0 61	0 560	+861	-16	1 11	04404	-784	-15	1 61	1 34445	18 9	-5
12	1 30519	1887	4	62	2 3405	830	15	12	03605	814	15	62	1 3 612	1837	4
13	1 3 4	1879	4	63	2 04220	799	16	13	2 02776	845	16	63	1 30771	1844	3
14	1 34277	1871	5	64	5 3	768	16	14	01916	875	15	64	1 8924	1851	4
15	1 36143	1861	5	65	05755	737	16	15	010 6	905	15	65	1 27 69	1858	3
0 16	1 37999	+1851	-5	0 66	2 06476	+705	-17	1 16	2 0106	-934	-14	1 66	1 5208	-1864	-3
17	1 39845	1841	6	67	07164	672	17	17	1 99158	96	14	67	1 3342	1869	3
18	1 41680	183	6	68	2 07819	639	16	18	1 9818	991	15	68	1 21470	1874	2
19	1 43504	1819	6	69	08442	607	17	19	1 97177	10 0	15	69	1 19594	1878	2
20	1 45316	18 5	8	70	2 9032	574	17	20	1 96142	1049	14	70	1 17714	1882	2
0 21	1 47113	+1791	-6	0 71	2 09589	+541	-17	1 21	1 95079	-1076	-13	1 71	1 15831	-1885	-2
22	1 48898	1779	6	72	2 10113	508	16	22	1 93991	110	14	72	1 13945	1887	1
23	1 50671	1766	8	73	10605	476	17	23	1 9 875	1130	14	73	1 1 057	1889	-1
24	1 5 4 9	175	8	74	2 11064	442	18	24	1 91731	1157	13	74	1 10167	1890	0
25	1 54171	1734	9	75	2 11188	408	16	25	1 9056	1183	14	75	1 08 77	1891	-1
0 26	1 55896	+1719	-7	0 76	1188	+375	-18	1 26	1 89366	-1209	-13	1 76	1 06386	-1891	0
27	1 57607	1702	9	77	2 12 37	340	17	27	1 88144	1235	13	77	1 04495	1891	+1
28	1 59300	1684	9	78	2 1 560	307	16	28	1 86897	1259	1	78	1 0 605	1890	1
29	1 60976	1668	9	79	1 851	274	17	29	1 856 7	1284	14	79	1 00716	1888	2
30	1 62635	1650	10	80	13108	240	17	30	1 84329	1310	1	80	0 98830	1885	1
0 31	1 64 75	+1631	9	0 81	13331	+6	17	1 31	1 83007	-1333	-11	1 81	0 96946	-1883	+2
32	1 65897	161	11	82	2 135 0	172	17	32	1 81663	1356	12	82	0 95065	1879	
33	1 67498	1592	10	83	13675	138	18	33	1 80 95	1379	11	83	0 93188	1875	
34	1 69 80	1571	11	84	13795	103	17	34	1 789 5	140	1	84	91315	1870	3
35	1 7 640	1551	10	85	13881	70	16	35	1 7749	1425	1	85	0 89448	1865	3
0 36	1 7218	+1530	-1	0 86	2 13935	+36	-18	1 36	1 76056	-1447	-11	1 86	0 87586	-1860	+3
37	1 73699	1508	11	87	2 13953	+2	16	37	1 74599	1468	11	87	0 857 9	1854	4
38	1 75196	1487	11	88	13939	-3	18	38	1 73120	1489	10	88	0 83879	1846	4
39	1 7667	1463	13	89	13889	66	16	39	1 7162	1508	10	89	0 8 037	1838	4
40	1 781	1439	11	90	138 7	99	17	40	1 7 104	1528	1	90	0 80203	1831	4
0 41	1 7955	+1416	-12	0 91	13691	-134	-18	1 41	1 68566	-1549	-11	1 91	0 78376	-1822	+6
42	1 8 954	139	13	92	2 13540	168	17	42	1 67007	1568	9	92	0 7656	181	4
43	1 8 333	1367	1	93	13355	0	17	43	1 65431	1585	9	93	0 74752	1803	6
44	1 83688	1343	13	94	13137	236	18	44	1 63837	1604	10	94	0 72955	1792	5
45	1 85018	1317	14	95	12884	269	16	45	1 6 224	1621	8	95	71168	1782	6
0 46	1 86321	+1 91	-1	0 96	2 12599	-30	-17	1 46	1 60595	-1638	-9	1 96	0 6939	-1770	+7
47	1 8760	1266	14	97	1 81	335	17	47	1 58949	1654	8	97	0 67629	1758	5
48	1 8885	1 38	14	98	2 11929	368	16	48	1 57287	1671	9	98	0 65876	1746	7
49	1 90 76	1 11	13	99	2 11546	401	18	49	1 55608	1686	7	99	0 64137	1732	7
0 50	1 91 74	+1185	-13	1 00	111 8	-434	-16	1 50	1 53916	-1700	-8	2 00	0 6241	-1718	+7

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XII continued

Equation of Longitude

Argument A

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$
d 2'00	o'62412	-1718	+ 7	d 2'50	o'03512	- 481	+16	d 3'00	o'20732	+1130	+13	d 3'50	1'02600	+1923	+ 1
01	o'60701	1705	7	51	o'03047	449	17	01	o'21875	1158	15	51	1'04523	1924	+ 1
02	o'59003	1690	9	52	o'02615	416	17	02	o'23048	1186	13	52	1'06448	1925	0
03	o'57322	1674	7	53	o'02216	382	17	03	o'24247	1213	14	53	1'08373	1925	0
04	o'55655	1659	9	54	o'01851	350	16	04	o'25473	1239	13	54	1'10298	1924	- 1
05	o'54005	1642	8	55	o'01517	318	17	05	o'26725	1266	14	55	1'12221	1923	0
2'06	o'52371	-1626	+ 9	2'56	o'01216	- 285	+16	3'06	o'28004	+1291	+12	3'56	1'14144	+1921	- 2
07	o'50754	1608	9	57	o'00947	251	18	07	o'29307	1316	13	57	1'16063	1919	1
08	o'49155	1591	9	58	o'00714	217	16	08	o'30635	1340	12	58	1'17981	1917	2
09	o'47573	1573	10	59	o'00513	185	17	09	o'31986	1365	14	59	1'19896	1913	3
10	o'46010	1554	10	60	o'00345	151	18	10	o'33364	1390	12	60	1'21806	1908	3
2'11	o'44466	-1535	+10	2'61	o'00212	- 116	+17	3'11	o'34766	+1414	+12	3'61	1'23711	+1902	- 3
12	o'42941	1515	11	62	o'00113	83	16	12	o'36191	1436	11	62	1'25610	1897	2
13	o'41437	1494	11	63	o'00046	50	17	13	o'37638	1458	11	63	1'27505	1891	4
14	o'39954	1474	10	64	o'00013	- 17	17	14	o'39107	1481	12	64	1'29392	1884	3
15	o'38490	1454	11	65	o'00013	+ 18	18	15	o'40599	1503	11	65	1'31273	1877	5
2'16	o'37047	-1431	+12	2'66	o'00048	+ 53	+18	3'16	o'42112	+1524	+11	3'66	1'33145	+1869	- 4
17	o'35628	1408	11	67	o'00118	87	17	17	o'43646	1545	11	67	1'35010	1861	5
18	o'34231	1386	11	68	o'00221	120	17	18	o'45201	1565	10	68	1'36866	1851	6
19	o'32856	1364	11	69	o'00357	153	17	19	o'46776	1585	10	69	1'38711	1841	4
20	o'31503	1341	13	70	o'00527	187	17	20	o'48371	1605	10	70	1'40548	1831	7
2'21	o'30175	-1316	+12	2'71	o'00730	+ 221	+18	3'21	o'49986	+1624	+ 9	3'71	1'42372	+1819	- 5
22	o'28871	1292	12	72	o'00968	254	16	22	o'51618	1641	9	72	1'44186	1809	6
23	o'27591	1268	13	73	o'01237	287	18	23	o'53268	1659	9	73	1'45989	1796	7
24	o'26336	1243	13	74	o'01541	321	17	24	o'54936	1677	9	74	1'47778	1783	6
25	o'25106	1217	13	75	o'01878	355	18	25	o'56622	1694	8	75	1'49555	1770	8
2'26	o'23902	-1192	+13	2'76	o'02250	+ 388	+16	3'26	o'58323	+1709	+ 8	3'76	1'51317	+1756	- 7
27	o'22723	1166	13	77	o'02654	421	17	27	o'60040	1725	8	77	1'53066	1742	7
28	o'21570	1139	14	78	o'03092	454	16	28	o'61772	1740	8	78	1'54801	1727	9
29	o'20445	1112	13	79	o'03562	487	17	29	o'63520	1755	7	79	1'56519	1711	7
30	o'19346	1085	14	80	o'04065	519	16	30	o'65281	1768	7	80	1'58223	1695	9
2'31	o'18275	-1057	+14	2'81	o'04600	+ 552	+17	3'31	o'67055	+1782	+ 8	3'81	1'59909	+1678	- 9
32	o'17232	1030	13	82	o'05169	586	17	32	o'68844	1796	7	82	1'61578	1661	9
33	o'16215	1003	14	83	o'05772	618	15	33	o'70646	1808	6	83	1'63230	1644	9
34	o'15226	974	16	84	o'06404	649	17	34	o'72459	1819	6	84	1'64865	1625	10
35	o'14268	944	14	85	o'07069	681	16	35	o'74284	1829	4	85	1'66480	1605	10
2'36	o'13338	- 915	+15	2'86	o'07765	+ 712	+16	3'36	o'76117	+1839	+ 6	3'86	1'68075	+1586	- 9
37	o'12438	885	15	87	o'08492	744	17	37	o'77962	1851	6	87	1'69652	1568	10
38	o'11568	856	15	88	o'09253	776	15	38	o'79818	1860	4	88	1'71210	1547	11
39	o'10727	827	15	89	o'10044	807	16	39	o'81682	1868	4	89	1'72746	1525	11
40	o'09915	796	16	90	o'10867	838	15	40	o'83553	1876	5	90	1'74260	1505	10
2'41	o'09135	- 766	+15	2'91	o'11719	+ 868	+16	3'41	o'85433	+1884	+ 4	3'91	1'75755	+1483	-12
42	o'08384	736	16	92	o'12602	898	15	42	o'87321	1891	3	92	1'77226	1461	10
43	o'07664	703	17	93	o'13515	929	16	43	o'89214	1896	3	93	1'78677	1439	13
44	o'06978	672	15	94	o'14459	959	15	44	o'91113	1902	3	94	1'80103	1414	12
45	o'06321	642	16	95	o'15432	988	15	45	o'93018	1907	2	95	1'81505	1391	11
2'46	o'05695	- 610	+16	2'96	o'16435	+1017	+14	3'46	o'94927	+1911	+ 2	3'96	1'82885	+1369	-12
47	o'05101	579	16	97	o'17466	1046	15	47	o'96840	1916	3	97	1'84242	1344	14
48	o'04538	546	17	98	o'18527	1075	14	48	o'98758	1919	1	98	1'85572	1318	12
49	o'04009	513	16	99	o'19615	1103	15	49	1'00678	1921	1	99	1'86878	1293	13
2'50	o'03512	- 481	+16	3'00	o'20732	+1130	+13	3'50	1'02600	+1923	+ 1	4'00	1'88158	+1267	-14

Applied Constant: +1°07500.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XII continued

Equation of Longitude

Argument A

A	Equation	3		A	Equation	3		A	Equation	3		A	Equation	3	
		$\Delta$	$\frac{1}{2}\Delta^2$			$\Delta$	$\frac{1}{2}\Delta^2$			$\Delta$	$\frac{1}{2}\Delta^2$			$\Delta$	$\frac{1}{2}\Delta^2$
4 00	1 88158	+ 1 67	- 14	4 50	1 3515	- 313	- 17	5 00	1 61148	- 1641	- 9	5 50	0 69923	- 1768	+ 7
01	1 89411	1 41	13	51	1 3185	347	17	01	1 59499	1657	8	51	0 6816	1756	6
02	1 9 639	1 15	13	52	1 8 1	381	17	02	1 57834	1673	8	52	0 6641	1744	7
03	1 91841	1189	14	53	1 4 4	414	17	03	1 56154	1689	9	53	0 64675	1730	7
04	1 93 16	1161	14	54	2 11994	446	16	04	1 54457	1704	7	54	0 6 95	1716	7
05	1 94163	1133	14	55	2 11532	478	16	05	1 52747	1717	7	55	0 61243	1703	7
4 06	1 95 8	+ 11 5	- 14	4 56	1 1039	- 510	- 17	5 06	1 51023	- 1731	- 7	5 56	0 59547	- 1688	+ 9
07	1 96373	1 78	14	57	2 10512	544	17	07	1 49286	1745	8	57	0 57868	1671	8
08	97437	1 49	15	58	09952	575	15	08	1 47534	1757	5	58	0 56 05	1656	7
09	1 98471	1020	15	59	2 0936	606	16	09	1 45772	1769	7	59	0 54556	1640	8
10	1 99476	990	15	60	2 08740	639	17	10	1 43997	1781	6	60	0 5 925	1622	10
4 11	00451	+ 96	- 14	4 61	08084	- 671	- 15	5 11	1 4 211	1791	- 5	5 61	0 51313	- 1605	+ 9
12	2 01398	93	15	62	2 07398	701	15	12	1 40415	180	6	62	0 49716	1588	10
13	0 315	901	16	63	0668	731	15	13	1 38608	1811	4	63	0 48138	1563	9
14	03 00	871	15	64	05936	76	14	14	1 36793	18 1	6	64	0 46578	1550	10
15	2 04056	841	16	65	05158	794	16	15	1 34967	1830	4	65	0 45038	1531	9
4 16	04881	+ 810	- 16	4 66	04349	- 824	- 15	5 16	1 33134	- 1838	- 5	5 66	0 43516	- 1511	+ 11
17	05675	778	16	67	03511	85	15	17	1 31292	1846	4	67	0 42016	1490	11
18	2 06437	747	15	68	2 0 643	883	15	18	1 29442	1853	3	68	0 40537	1469	11
19	2 07169	716	16	69	01745	912	14	19	1 27587	1859	4	69	0 39 79	1448	10
20	2 7869	684	16	70	00819	941	15	20	1 25725	1864	2	70	0 37641	1427	12
4 21	2 08537	+ 65	- 16	4 71	1 99863	- 970	- 14	5 21	1 23859	- 1869	- 3	5 71	0 36226	- 1404	+ 12
22	09173	6 0	17	72	1 98879	999	15	22	1 1987	1875	3	72	0 34834	1382	11
23	2 09776	587	16	73	1 97865	10 8	14	23	1 20110	1879	2	73	0 33463	1359	13
24	1 347	5 5	16	74	1 968 4	1 55	14	24	1 18229	1883	2	74	0 3 117	1336	11
25	2 10886	5 3	16	75	1 95755	1083	14	25	1 16345	1886	2	75	0 30792	131	14
4 26	2 11393	+ 491	- 17	4 76	1 94659	- 1110	- 14	5 26	1 14458	- 1888	- 1	5 76	0 29494	- 1287	+ 12
27	11867	457	17	77	1 93536	1137	14	27	1 12570	1889	1	77	0 28 19	1262	13
28	2 12307	424	16	78	1 92385	1164	13	28	1 10681	1890	1	78	0 26970	1 37	13
29	1 715	391	18	79	1 91 09	1189	13	29	1 08790	189	- 1	79	0 5746	1211	13
30	13088	357	17	80	1 90007	1215	13	30	1 6898	1891	+ 1	80	0 4548	1186	13
4 31	13428	+ 324	- 17	4 81	1 88779	- 1241	- 13	5 31	1 05008	1890	0	5 81	0 23375	- 1160	+ 14
32	2 13735	91	17	82	1 87526	1265	12	32	1 03118	1889	+ 1	82	0 2 229	1133	13
33	14 09	58	17	83	1 86 49	1 91	14	33	1 01 30	1888	1	83	0 21109	11 6	15
34	14 50	24	17	84	1 84945	1315	11	34	0 99343	1885	2	84	0 20018	1078	14
35	14457	190	17	85	1 83620	1337	12	35	0 97460	1882	2	85	0 18954	1050	14
4 36	14630	+ 156	- 18	4 86	1 82271	- 1361	- 12	5 36	95580	- 1878	+ 2	5 86	0 17918	- 1023	+ 14
37	2 14768	121	17	87	1 80898	1385	1	37	93704	1874	2	87	0 16909	994	16
38	2 14872	88	16	88	1 79502	1407	11	38	91832	187		88	0 15931	964	14
39	14945	56	18	89	1 78084	14 9	11	39	0 89964	1865	4	89	0 14981	937	14
40	14983	+ 1	17	90	1 76645	1450	11	40	0 88103	1858	3	90	0 14058	908	16
4 41	14987	- 13	- 17	4 91	1 75184	- 1472	- 11	5 41	0 86248	- 1852	+ 4	5 91	0 13166	- 877	+ 16
42	14958	46	17	92	1 73701	1493	10	42	0 84400	1845	3	92	0 1 304	848	15
43	2 14895	80	16	93	1 72198	1513	10	43	0 8 558	1838	5	93	0 11471	818	16
44	14799	114	18	94	1 70676	153	10	44	0 80724	1829	5	94	0 10669	787	15
45	14668	148	17	95	1 69134	155	10	45	0 78900	1820	4	95	0 09897	756	16
4 46	14504	181	- 17	4 96	1 6757	- 1571	- 9	5 46	0 77084	- 1811	+ 5	5 96	0 09157	- 725	+ 16
47	14306	214	16	97	1 65993	1588	9	47	0 75279	1801	5	97	0 08448	694	15
48	14076	48	18	98	1 64396	1607	10	48	0 73483	1791	5	98	0 07769	664	16
49	2 13811	281	16	99	1 62780	16 4	8	49	0 71697	1780	6	99	0 07121	632	17
4 50	2 13515	- 313	- 17	5 00	1 61148	- 1641	- 9	5 50	0 69923	- 1768	+ 7	6 00	0 06506	- 599	+ 16



# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XII continued

Equation of Longitude

Argument A

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$	A	Equa- tion	$\Delta$	$\frac{1}{2} \Delta^2$
<sup>d</sup> 6.00	0.06506	- 599	+ 16	<sup>d</sup> 6.50	0.18060	+ 1040	+ 14	<sup>d</sup> 7.00	0.97665	+ 1926	+ 2	<sup>d</sup> 7.50	1.84895	+ 1319	- 12
.01	0.05923	568	16	.51	0.19114	1068	14	.01	0.99593	1929	1	.51	1.86202	1294	14
.02	0.05371	536	17	.52	0.20195	1097	16	.02	1.01522	1931	2	.52	1.87482	1267	13
.03	0.04852	503	17	.53	0.21307	1127	15	.03	1.03454	1933	1	.53	1.88736	1242	13
.04	0.04366	470	17	.54	0.22448	1155	14	.04	1.05387	1934	+ 1	.54	1.89965	1215	15
.05	0.03913	437	16	.55	0.23616	1182	14	.05	1.07321	1934	- 1	.55	1.91165	1187	14
6.06	0.03492	- 404	+ 17	6.56	0.24811	+ 1208	+ 13	7.06	1.09254	+ 1934	+ 1	7.56	1.92338	+ 1160	- 14
.07	0.03105	371	17	.57	0.26032	1236	15	.07	1.11188	1933	- 1	.57	1.93484	1132	15
.08	0.02751	338	16	.58	0.27282	1264	14	.08	1.13120	1931	1	.58	1.94601	1103	15
.09	0.02429	305	17	.59	0.28559	1290	13	.09	1.15050	1929	1	.59	1.95689	1074	15
.10	0.02141	272	17	.60	0.29861	1315	13	.10	1.16978	1926	2	.60	1.96748	1044	15
6.11	0.01886	- 238	+ 17	6.61	0.31188	+ 1340	+ 13	7.11	1.18902	+ 1922	- 2	7.61	1.97777	+ 1015	- 14
.12	0.01665	204	17	.62	0.32541	1365	12	.12	1.20822	1919	2	.62	1.98778	986	15
.13	0.01478	171	16	.63	0.33918	1390	13	.13	1.22739	1914	4	.63	1.99749	956	15
.14	0.01323	138	17	.64	0.35320	1414	12	.14	1.24649	1908	3	.64	2.00690	927	15
.15	0.01202	104	18	.65	0.36745	1437	12	.15	1.26554	1902	4	.65	2.01602	895	17
6.16	0.01116	- 69	+ 18	6.66	0.38194	+ 1461	+ 12	7.16	1.28452	+ 1895	- 3	7.66	2.02480	+ 864	- 15
.17	0.01065	35	17	.67	0.39666	1484	12	.17	1.30344	1888	4	.67	2.03329	833	16
.18	0.01047	- 2	17	.68	0.41161	1506	11	.18	1.32228	1880	4	.68	2.04146	802	16
.19	0.01062	+ 33	18	.69	0.42678	1527	10	.19	1.34104	1872	5	.69	2.04932	771	16
.20	0.01113	68	17	.70	0.44215	1548	11	.20	1.35971	1862	5	.70	2.05687	739	16
6.21	0.01197	+ 101	+ 17	6.71	0.45774	+ 1570	+ 11	7.21	1.37828	+ 1852	- 5	7.71	2.06410	+ 707	- 17
.22	0.01315	134	16	.72	0.47354	1591	11	.22	1.39675	1841	6	.72	2.07100	674	16
.23	0.01465	168	18	.73	0.48955	1610	9	.23	1.41510	1830	6	.73	2.07758	642	16
.24	0.01650	203	18	.74	0.50574	1628	9	.24	1.43334	1819	6	.74	2.08384	610	16
.25	0.01870	237	17	.75	0.52211	1648	11	.25	1.45147	1807	7	.75	2.08978	578	17
6.26	0.02124	+ 272	+ 18	6.76	0.53869	+ 1666	+ 8	7.26	1.46947	+ 1794	- 6	7.76	2.09539	+ 545	- 17
.27	0.02413	305	16	.77	0.55543	1683	9	.27	1.48735	1781	8	.77	2.10067	511	17
.28	0.02734	337	16	.78	0.57235	1700	8	.28	1.50508	1766	8	.78	2.10561	477	17
.29	0.03087	371	18	.79	0.58943	1717	9	.29	1.52266	1751	7	.79	2.11021	444	17
.30	0.03475	406	17	.80	0.60669	1734	8	.30	1.54010	1736	8	.80	2.11448	412	16
6.31	0.03897	+ 439	+ 17	6.81	0.62410	+ 1749	+ 8	7.31	1.55738	+ 1720	- 9	7.81	2.11844	+ 378	- 18
.32	0.04352	471	16	.82	0.64166	1764	8	.32	1.57449	1703	8	.82	2.12204	344	17
.33	0.04839	504	17	.83	0.65937	1778	7	.33	1.59144	1687	9	.83	2.12531	311	16
.34	0.05360	538	17	.84	0.67721	1791	7	.34	1.60822	1669	9	.84	2.12826	277	18
.35	0.05915	572	17	.85	0.69518	1803	6	.35	1.62482	1651	9	.85	2.13085	243	16
6.36	0.06503	+ 604	+ 16	6.86	0.71327	+ 1816	+ 7	7.36	1.64124	+ 1633	- 9	7.86	2.13312	+ 208	- 18
.37	0.07122	637	18	.87	0.73150	1829	6	.37	1.65748	1614	11	.87	2.13503	174	17
.38	0.07776	670	16	.88	0.74984	1840	6	.38	1.67351	1593	11	.88	2.13660	141	16
.39	0.08461	700	15	.89	0.76829	1850	5	.39	1.68933	1573	10	.89	2.13785	107	18
.40	0.09176	732	17	.90	0.78684	1860	5	.40	1.70496	1553	11	.90	2.13874	73	16
6.41	0.09925	+ 765	+ 16	6.91	0.80549	+ 1870	+ 5	7.41	1.72038	+ 1531	- 11	7.91	2.13931	+ 40	- 17
.42	0.10706	797	16	.92	0.82424	1878	3	.42	1.73559	1510	11	.92	2.13954	+ 6	18
.43	0.11519	828	15	.93	0.84305	1886	5	.43	1.75058	1489	11	.93	2.13942	- 29	17
.44	0.12361	858	16	.94	0.86196	1894	3	.44	1.76536	1465	13	.94	2.13896	64	18
.45	0.13235	889	15	.95	0.88093	1901	4	.45	1.77988	1441	11	.95	2.13815	98	17
6.46	0.14139	+ 919	+ 15	6.96	0.89998	+ 1907	+ 2	7.46	1.79418	+ 1419	- 12	7.96	2.13701	- 130	- 16
.47	0.15073	950	16	.97	0.91907	1912	3	.47	1.80825	1395	12	.97	2.13555	164	18
.48	0.16039	981	15	.98	0.93822	1917	2	.48	1.82208	1370	14	.98	2.13374	198	17
.49	0.17034	1011	16	.99	0.95741	1922	3	.49	1.83564	1344	13	.99	2.13159	232	17
.50	0.18060	+ 1040	+ 14	7.00	0.97665	+ 1926	+ 2	7.50	1.84895	+ 1319	- 12	8.00	2.12910	- 266	- 17

Applied Constant: +1.07500.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

**XIII**

<b>B</b>	Equation	$\Delta$
00	000100	+ 6
1	106	5
2	110	3
3	111	+ 1
4	111	-
5	107	6
06	0001	- 9
7	89	1
8	76	14
9	6	14
10	47	15
11	00034	- 13
2	2	1
3	1	8
4	6	- 4
5	5	+ 1
16	000007	+ 4
7	13	8
8	3	11
9	36	15
20	5	17
21	000070	+ 19
2	89	19
3	19	21
4	128	18
5	146	17
26	00016	+ 15
7	176	12
8	186	9
9	19	4
30	195	+
31	000194	- 4
2	189	7
3	180	11
4	168	13
5	154	14
36	00140	- 15
7	15	13
8	11	1
9	1	10
40	94	6
41	000089	- 3
2	89	+ 1
3	90	3
4	94	5
5	99	5
46	000105	+ 5
7	109	4
8	112	+ 1
9	111	-
50	000108	- 4

Appl 10 t t + ∞

**XIV**

<b>C</b>	Equation	$\Delta$
000	00010	+ 15
08	113	16
16	126	16
24	138	15
32	149	14
40	160	11
048	000169	+ 11
56	177	09
64	183	08
72	188	05
80	191	+ 03
088	000192	00
96	191	- 3
104	189	04
12	184	06
20	178	09
128	000171	- 10
36	162	13
44	152	14
52	141	14
60	129	16
168	000116	- 16
76	103	15
84	90	16
92	77	16
200	65	15
208	000053	- 14
16	43	13
24	33	11
32	25	10
40	18	08
248	000013	- 05
56	10	04
64	8	- 01
72	8	+ 01
80	1	04
288	000014	+ 06
96	20	08
304	7	10
12	36	13
20	46	13
328	000051	+ 15
36	69	15
44	81	15
52	94	16
60	107	16
368	000120	+ 16
76	13	15
84	144	15
92	155	13
400	000165	+ 13

Appl dC t t +

**XV**

<b>D</b>	Equation	$\Delta$
000	00100	+ 170
04	1067	165
08	1133	165
12	1199	165
16	1264	160
20	1327	155
024	001389	+ 155
28	1449	145
32	1507	143
36	1562	133
40	1614	18
044	001663	+ 120
48	1709	110
52	1751	100
56	1790	93
60	1825	83
064	001855	+ 70
68	1882	60
72	1903	50
76	1921	38
80	1933	25
084	00194	+ 15
88	1945	+ 3
92	1913	- 10
96	1937	20
100	1927	35
104	001911	- 43
08	1891	55
12	1867	68
16	1838	78
20	1805	88
124	001768	- 98
28	177	108
32	1683	115
36	1635	123
40	1583	133
144	001530	138
48	1473	145
52	1414	150
56	1353	155
60	1300	16
164	001226	- 163
68	1160	165
72	1094	168
76	1027	168
80	96	168
184	000894	- 165
88	88	165
92	763	16
96	699	160
200	000636	- 155
200	000636	- 155
04	576	148
08	517	143
12	460	140
16	407	130
20	357	13
224	000309	- 113
28	65	105
32	25	95
36	189	88
40	157	75
244	00019	- 65
48	105	53
52	86	43
56	71	30
60	61	20
264	000056	- 08
68	55	+ 05
72	60	15
76	68	30
80	82	35
284	000100	+ 53
88	13	63
92	150	73
96	181	83
300	217	95
304	000256	+ 103
08	299	113
12	345	120
16	395	128
20	448	135
324	000503	+ 143
28	562	150
32	622	153
36	684	158
40	748	160
344	000813	+ 165
48	879	165
52	945	168
56	101	165
60	1079	168
364	01145	+ 165
68	111	163
72	1275	160
76	1338	155
80	1400	153
384	001459	+ 145
88	1517	140
92	1571	135
96	1623	125
400	00167	+ 115

Appl dC t t +

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XVI

Equations of Longitude

XVII

1	2	3	4	1	2	3	4
E	Equa- tion	$\Delta$ 0 <sup>d</sup> 01	$\frac{1}{2} \Delta^2$	E	Equa- tion	$\Delta$ 0 <sup>d</sup> 01	$\frac{1}{2} \Delta^2$
d	o			d	o		
0'00	0'03600	+62,4	-0,0	2'00	0'02236	-57,5	+0,2
04	3849	62,2	0,0	04	2011	55,7	0,3
08	4098	61,8	0,1	08	1792	53,5	0,3
12	4343	61,0	0,1	12	1583	51,1	0,3
16	4585	59,9	0,2	16	1384	48,5	0,4
20	4822	58,5	0,2	20	1195	45,6	0,4
0'24	0'05053	+56,9	-0,2	2'24	0'01019	-42,5	+0,4
28	5277	54,9	0,3	28	856	39,2	0,4
32	5492	52,7	0,3	32	706	35,7	0,5
36	5698	50,2	0,3	36	571	31,9	0,5
40	5893	47,4	0,4	40	451	28,1	0,5
0'44	0'06077	+44,3	-0,4	2'44	0'00347	-24,0	+0,5
48	6248	41,2	0,4	48	259	19,9	0,5
52	6406	37,8	0,4	52	188	15,7	0,5
56	6550	34,2	0,5	56	133	11,4	0,6
60	6679	30,4	0,5	60	97	7,0	0,6
0'64	0'06793	+26,7	-0,5	2'64	0'00078	-2,6	+0,6
68	6890	22,4	0,5	68	76	+1,8	0,6
72	6971	18,8	0,5	72	91	6,2	0,6
76	7036	14,0	0,5	76	125	10,6	0,6
80	7083	9,7	0,6	80	176	14,9	0,5
0'84	0'07113	+5,3	-0,6	2'84	0'00244	+19,2	+0,5
88	7125	+0,9	0,6	88	329	23,3	0,5
92	7120	-3,6	0,6	92	430	27,4	0,5
96	7097	7,9	0,5	96	548	31,3	0,5
1'00	7057	12,3	0,6	3'00	680	35,0	0,5
1'04	0'06999	-16,6	-0,5	3'04	0'00827	+38,6	+0,4
08	6924	20,8	0,5	08	988	41,9	0,4
12	6832	24,9	0,5	12	1162	45,1	0,4
16	6725	28,9	0,5	16	1348	48,0	0,4
20	6601	32,8	0,5	20	1546	50,7	0,3
1'24	0'06463	-36,4	-0,5	3'24	0'01754	+53,1	+0,3
28	6310	39,9	0,4	28	1971	55,3	0,3
32	6144	43,2	0,4	32	2196	57,2	0,2
36	5966	46,2	0,4	36	2428	58,8	0,2
40	5775	49,1	0,4	40	2666	60,2	0,2
1'44	0'05574	-51,7	-0,3	3'44	0'02909	+61,2	+0,1
48	5362	54,1	0,3	48	3156	61,9	+0,1
52	5142	56,1	0,3	52	3404	62,3	0,0
56	4913	57,9	0,2	56	3654	62,4	0,0
60	4679	59,4	0,2	60	3903	62,2	-0,1
1'64	0'04439	-60,6	-0,1	3'64	0'04151	+61,4	-0,1
68	4195	61,5	0,1	68	4396	60,8	0,1
72	3947	62,1	-0,1	72	4637	59,6	0,2
76	3698	62,4	0,0	76	4872	58,2	0,2
80	3448	62,4	0,0	80	5102	56,4	0,2
1'84	0'03199	-62,0	+0,1	3'84	0'05323	+54,4	-0,3
88	2953	61,4	0,1	88	5537	52,2	0,3
92	2709	60,4	0,1	92	5740	49,6	0,3
96	2470	59,1	0,2	96	5933	46,8	0,4
2'00	0'02236	-57,5	+0,2	4'00	0'06113	+43,8	-0,4

Applied Constant: +0°03600.

1	2	3	1	2	3
F	Equa- tion	$\Delta$ 0 <sup>d</sup> 01	F	Equa- tion	$\Delta$ 0 <sup>d</sup> 01
d	o		d	o	
0'00	0'01500	+26,2	2'00	0'00926	-24,2
04	1605	26,2	04	831	23,4
08	1709	26,0	08	739	22,5
12	1813	25,7	12	651	21,5
16	1914	25,2	16	567	20,4
20	2014	24,6	20	488	19,2
0'24	0'02111	+23,9	2'24	0'00414	-17,9
28	2205	23,1	28	345	16,5
32	2296	22,2	32	282	15,0
36	2383	21,1	36	225	13,4
40	2465	20,0	40	176	11,8
0'44	0'02542	+18,7	2'44	0'00132	-10,1
48	2614	17,4	48	95	8,4
52	2682	15,9	52	65	6,6
56	2742	14,4	56	42	4,8
60	2796	12,8	60	27	2,9
0'64	0'02844	+11,1	2'64	0'00019	-1,1
68	2884	9,4	68	18	+0,8
72	2919	7,7	72	24	2,4
76	2944	5,9	76	38	4,5
80	2964	4,1	80	60	6,3
0'84	0'02977	+2,2	2'84	0'00088	+8,1
88	2982	+0,4	88	124	9,8
92	2980	-1,5	92	167	11,5
96	2970	3,4	96	216	13,2
1'00	2953	5,2	3'00	272	14,7
1'04	0'02930	-7,0	3'04	0'00334	+16,2
08	2898	8,8	08	401	17,8
12	2860	10,5	12	475	19,0
16	2815	12,2	16	554	20,2
20	2763	13,8	20	637	21,3
1'24	0'02705	-15,3	3'24	0'00724	+22,4
28	2640	16,8	28	816	23,3
32	2570	18,2	32	910	24,1
36	2494	19,5	36	1008	24,8
40	2414	20,7	40	1108	25,3
1'44	0'02329	-21,8	3'44	0'01210	+25,8
48	2240	22,7	48	1314	26,1
52	2147	23,6	52	1418	26,2
56	2051	24,4	56	1524	26,3
60	1952	25,0	60	1628	26,2
1'64	0'01851	-25,5	3'64	0'01733	+25,9
68	1748	25,9	68	1836	25,6
72	1646	26,1	72	1937	25,1
76	1541	26,2	76	2035	24,5
80	1436	26,2	80	2132	23,8
1'84	0'01331	-26,1	3'84	0'02225	+22,9
88	1228	25,8	88	2315	21,9
92	1125	25,4	92	2400	20,9
96	1025	24,9	96	2482	19,7
2'00	0'00926	-24,2	4'00	1'02558	+18,4

Applied Constant: +0°01500.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XVIII

Equations of Longitude

XIX

G	Equation	$\Delta$	G	Equation	$\Delta$
0	0 01 00	+17 8	250	0 00403	-1 8
5	1289	17 8	255	341	11 8
10	1378	17 6	260	85	10 7
15	1466	17 4	265	35	9 5
20	1551	17	270	19	8 3
25	1635	16 5	275	152	7 1
30	0 01716	+15 9	280	0 001 0	- 5 7
35	1794	15 3	285	94	4 4
40	1868	14 5	290	76	3 0
45	1939	13 6	295	64	1 7
50	20 4	1 7	300	60	- 0
55	0 02 65	+11 6	305	0 0062	+ 1
60	1	10 5	310	71	2 5
65	170	9 4	315	87	4 0
70	2215	8 2	320	110	5 3
75	225	6 9	325	140	6 6
80	0 0 284	+ 5 6	330	0 00176	+ 7 9
85	23 8	4 3	335	219	9 1
90	3 6	9	340	267	10 3
95	2337	1 5	345	321	11 4
100	341	+ 0 1	350	381	12 4
105	0 02339	- 1 3	355	0 00445	+13 4
110	328	2 7	360	514	14 3
115	311	4 1	365	588	15 1
120	88	5 4	370	665	15 8
125	2257	6 8	375	745	16 4
130	0 222	- 8 0	380	0 008 8	+16 9
135	177	9 3	385	914	17 3
140	2127	10 4	390	1001	17 6
145	73	11 5	395	1089	17 8
150	013	12 6	400	1179	17 9
155	0 01948	-13 5	405	0 01 68	+17 8
160	1878	14 4	410	1357	17 7
165	1804	15	415	1446	17 4
170	17 6	15 9	420	153	17 1
175	1646	16 5	425	1616	16 6
180	0 0156	-16 9	430	0 01697	+16 1
185	1476	17 3	435	1776	15 4
190	1389	17 7	440	1851	14 7
195	130	17 8	445	19 3	13 8
200	1211	17 9	450	1990	1 9
205	0 011 1	-17 8	455	0 0 052	+11 9
210	103	17 7	460	2108	10 8
215	944	17 4	465	160	9 7
220	859	17 0	470	205	8 5
225	774	16 6	475	2244	7
230	0 00693	-16 0	480	0 02277	+ 5 9
235	615	15 3	485	2303	4 6
240	540	14 6	490	23	3 2
245	469	13 7	495	2334	1 8
250	0 00403	-12 8	500	0 2340	+ 0 4

Appl d C tant + 00

H	Equation	$\Delta$	H	Equation	$\Delta$
0	0 00800	+10 5	250	0 00581	-10 1
5	853	10 5	255	531	9 9
10	905	10 4	260	483	9 6
15	957	10 3	265	435	9 3
20	10 8	1 1	270	39	8 9
25	1058	9 9	275	347	8 5
30	0 01106	+ 9 6	280	0 00306	- 8
35	1154	9 3	285	266	7 6
40	1199	9 0	290	230	7 0
45	1243	8 6	295	196	6 5
50	1285	8 1	300	166	5 9
55	0 01325	+ 7 7	305	0 00138	- 5 3
60	1361	7 2	310	113	4 6
65	1396	6 6	315	9	4 0
70	1427	6 0	320	74	3 3
75	1456	5 4	325	59	2 6
80	0 01481	+ 4 8	330	0 00048	- 1 9
85	1504	4 2	335	40	1 2
90	15	3 5	340	36	- 0 5
95	1538	8	345	35	+ 0 3
100	1550	2 1	350	38	1 0
105	0 01559	+ 1 4	355	0 00045	+ 1 7
110	1564	+ 7	360	55	2 4
115	1565	- 0 1	365	69	3 1
120	1563	0 8	370	86	3 8
125	1557	1 5	375	106	4 5
130	0 01548	- 2 2	380	0 00130	+ 5 1
135	1535	3 0	385	157	5 7
140	1518	3 6	390	187	6 3
145	1499	4 3	395	220	6 9
150	1476	4 9	400	256	7 4
155	0 01450	- 5 6	405	0 00294	+ 7 9
160	1421	6 2	410	334	8 3
165	1388	6 7	415	377	8 8
170	1353	7 3	420	422	9 1
175	1316	7 8	425	468	9 5
180	0 01276	- 8	430	0 00516	+ 9 8
185	1234	8 7	435	566	10 0
190	1189	9 0	440	616	10 2
195	1143	9 4	445	668	10 4
200	1095	9 7	450	720	10 5
205	0 01046	-10 0	455	0 00772	+10 5
210	996	10 2	460	8 5	10 5
215	945	10 3	465	878	10 5
220	893	10 4	470	929	10 3
225	841	10 5	475	980	10 2
230	0 00788	-10 5	480	0 01031	+10 0
235	735	1 5	485	1081	9 8
240	683	10 4	490	11 9	9 5
245	631	10 3	495	1175	9 2
250	0 00581	-1 1	500	0 01 20	+ 8 8

Appl d C t t + 800

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XX

Equations of Longitude

XXI

1	2	3	4	1	2	3	4
I	Equa- tion	$\Delta$ $r^d$	$\frac{1}{2} \Delta^2$	I	Equa- tion	$\Delta$ $r^d$	$\frac{1}{2} \Delta^2$
<sup>d</sup> <b>0</b>	0°04500	-58,0	,00	<sup>d</sup> <b>250</b>	0°05013	+57,7	-,05
<b>5</b>	4210	57,9	+,03	<b>255</b>	5300	57,1	,07
<b>10</b>	3921	57,6	,05	<b>260</b>	5583	56,4	,09
<b>15</b>	3635	57,0	,08	<b>265</b>	5863	55,3	,12
<b>20</b>	3352	56,1	,10	<b>270</b>	6136	54,0	,14
<b>25</b>	3074	55,0	,13	<b>275</b>	6401	52,5	,16
<b>30</b>	0°02802	-53,7	+,15	<b>280</b>	0°06659	+50,8	-,18
<b>35</b>	2538	52,2	,17	<b>285</b>	6908	48,9	,21
<b>40</b>	2282	50,4	,19	<b>290</b>	7147	46,7	,23
<b>45</b>	2036	48,4	,21	<b>295</b>	7375	44,4	,25
<b>50</b>	1799	46,2	,23	<b>300</b>	7590	41,8	,26
<b>55</b>	0°01573	-43,8	+,25	<b>305</b>	0°07792	+39,2	-,28
<b>60</b>	1362	41,2	,27	<b>310</b>	7981	36,2	,30
<b>65</b>	1162	38,5	,29	<b>315</b>	8154	33,2	,31
<b>70</b>	978	35,5	,31	<b>320</b>	8312	30,0	,32
<b>75</b>	808	32,4	,31	<b>325</b>	8454	26,8	,33
<b>80</b>	0°00653	-29,3	+,32	<b>330</b>	0°08579	+23,4	-,35
<b>85</b>	516	26,0	,34	<b>335</b>	8687	19,8	,36
<b>90</b>	394	22,5	,35	<b>340</b>	8778	16,2	,36
<b>95</b>	291	19,0	,36	<b>345</b>	8850	12,6	,37
<b>100</b>	204	15,4	,37	<b>350</b>	8904	8,8	,38
<b>105</b>	0°00137	-11,7	+,37	<b>355</b>	0°08938	+5,1	-,38
<b>110</b>	88	8,0	,37	<b>360</b>	8954	+1,3	,38
<b>115</b>	58	4,3	,38	<b>365</b>	8950	-2,5	,38
<b>120</b>	45	-0,4	,39	<b>370</b>	8929	6,2	,38
<b>125</b>	53	+3,4	,38	<b>375</b>	8888	10,0	,38
<b>130</b>	0°00079	+7,1	+,38	<b>380</b>	0°08829	-13,7	-,37
<b>135</b>	124	10,9	,37	<b>385</b>	8752	17,3	,36
<b>140</b>	187	14,5	,37	<b>390</b>	8656	20,9	,36
<b>145</b>	269	18,2	,36	<b>395</b>	8543	24,4	,35
<b>150</b>	368	21,7	,35	<b>400</b>	8413	27,8	,33
<b>155</b>	0°00486	+25,2	+,34	<b>405</b>	0°08265	-31,0	-,32
<b>160</b>	620	28,5	,33	<b>410</b>	8103	34,2	,31
<b>165</b>	771	31,8	,32	<b>415</b>	7925	37,1	,29
<b>170</b>	937	34,9	,30	<b>420</b>	7732	40,0	,28
<b>175</b>	1119	37,8	,29	<b>425</b>	7525	42,6	,26
<b>180</b>	0°01315	+40,6	+,27	<b>430</b>	0°07306	-45,1	-,24
<b>185</b>	1525	43,2	,25	<b>435</b>	7075	47,4	,22
<b>190</b>	1746	45,6	,24	<b>440</b>	6833	49,5	,20
<b>195</b>	1980	47,9	,22	<b>445</b>	6581	51,3	,18
<b>200</b>	2225	49,9	,19	<b>450</b>	6320	53,0	,16
<b>205</b>	0°02479	+51,7	+,17	<b>455</b>	0°06052	-54,5	-,13
<b>210</b>	2741	53,4	,15	<b>460</b>	5776	55,6	,11
<b>215</b>	3011	54,7	,12	<b>465</b>	5495	56,6	,09
<b>220</b>	3288	55,8	,10	<b>470</b>	5211	57,3	,06
<b>225</b>	3570	56,8	,08	<b>475</b>	4923	57,8	,04
<b>230</b>	0°03855	+57,4	+,06	<b>480</b>	0°04633	-58,1	-,01
<b>235</b>	4143	57,9	,04	<b>485</b>	4343	58,0	+,02
<b>240</b>	4433	58,1	+,01	<b>490</b>	4053	57,8	,04
<b>245</b>	4723	58,0	-,02	<b>495</b>	3766	57,3	,07
<b>250</b>	0°05013	+57,7	-,05	<b>500</b>	0°03482	-56,5	+,09

Applied Constant: +0°04500.

1	2	3	1	2	3
J	Equa- tion	$\Delta$ $r^d$	J	Equa- tion	$\Delta$ $r^d$
<sup>d</sup> <b>0</b>	0°01800	-23,3	<sup>d</sup> <b>250</b>	0°01968	+23,2
<b>5</b>	1684	23,2	<b>255</b>	2083	23,0
<b>10</b>	1568	23,1	<b>260</b>	2197	22,7
<b>15</b>	1454	22,8	<b>265</b>	2309	22,3
<b>20</b>	1340	22,5	<b>270</b>	2420	21,8
<b>25</b>	1229	22,1	<b>275</b>	2527	21,3
<b>30</b>	0°01120	-21,5	<b>280</b>	0°02632	+20,6
<b>35</b>	1013	20,9	<b>285</b>	2734	19,9
<b>40</b>	910	20,2	<b>290</b>	2831	19,1
<b>45</b>	811	19,4	<b>295</b>	2924	18,2
<b>50</b>	716	18,6	<b>300</b>	3012	17,2
<b>55</b>	0°00625	-17,6	<b>305</b>	0°03095	+16,1
<b>60</b>	540	16,6	<b>310</b>	3173	15,0
<b>65</b>	460	15,5	<b>315</b>	3246	13,8
<b>70</b>	385	14,4	<b>320</b>	3312	12,6
<b>75</b>	316	13,2	<b>325</b>	3371	11,3
<b>80</b>	0°00254	-11,9	<b>330</b>	0°03424	+10,0
<b>85</b>	197	10,6	<b>335</b>	3470	8,6
<b>90</b>	148	9,2	<b>340</b>	3511	7,2
<b>95</b>	106	7,8	<b>345</b>	3543	5,7
<b>100</b>	70	6,4	<b>350</b>	3568	4,3
<b>105</b>	0°00042	-4,9	<b>355</b>	0°03586	+2,8
<b>110</b>	21	3,4	<b>360</b>	3596	+1,3
<b>115</b>	8	2,0	<b>365</b>	3598	-0,3
<b>120</b>	2	-0,4	<b>370</b>	3593	1,8
<b>125</b>	4	+1,1	<b>375</b>	3581	3,3
<b>130</b>	0°00013	+2,6	<b>380</b>	0°03561	-4,7
<b>135</b>	30	4,1	<b>385</b>	3534	6,2
<b>140</b>	54	5,6	<b>390</b>	3499	7,6
<b>145</b>	85	7,0	<b>395</b>	3457	9,0
<b>150</b>	124	8,4	<b>400</b>	3409	10,4
<b>155</b>	0°00170	+9,8	<b>405</b>	0°03353	-11,7
<b>160</b>	222	11,2	<b>410</b>	3292	13,0
<b>165</b>	281	12,5	<b>415</b>	3224	14,2
<b>170</b>	346	13,7	<b>420</b>	3150	15,4
<b>175</b>	418	14,9	<b>425</b>	3071	16,5
<b>180</b>	0°00494	+16,0	<b>430</b>	0°02986	-17,5
<b>185</b>	577	17,1	<b>435</b>	2896	18,5
<b>190</b>	665	18,1	<b>440</b>	2801	19,3
<b>195</b>	757	19,0	<b>445</b>	2701	20,1
<b>200</b>	854	19,8	<b>450</b>	2599	20,8
<b>205</b>	0°00955	+20,6	<b>455</b>	0°02494	-21,5
<b>210</b>	1060	21,2	<b>460</b>	2385	22,0
<b>215</b>	1167	21,8	<b>465</b>	2274	22,5
<b>220</b>	1277	22,3	<b>470</b>	2161	22,8
<b>225</b>	1390	22,7	<b>475</b>	2046	23,1
<b>230</b>	0°01504	+22,9	<b>480</b>	0°01930	-23,2
<b>235</b>	1619	23,2	<b>485</b>	1814	23,3
<b>240</b>	1735	23,3	<b>490</b>	1698	23,2
<b>245</b>	1852	23,3	<b>495</b>	1582	23,1
<b>250</b>	0°01968	+23,2	<b>500</b>	0°01467	-22,9

Applied Constant: +0°01800.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

XXII		XXIII		XXIV			XXV		XXVI	
K	Equation	L	Equation	M	Equation	$\Delta$	N	Equation	O	Equation
<sup>d</sup> 000	0 00040	00	0 0003	<sup>d</sup> 00	0 00 00	+ 35	00	0 00090	<sup>d</sup> 00	0 00040
04	44	1	5	1	35	35	1	105	1	46
08	49	2		2	27	34	2	119	2	52
12	53	3	16	3	30	31	3	13	3	57
16	57	4	1	4	331	7	4	145	4	6
20	6	5	9	5	356	22	5	155	5	66
024	0 00063	06	0 00006	06	0 00375	+ 17	06	0 00163	06	00 70
28	66	7	4	7	389	11	7	169	7	72
32	68	8	3	8	397	+ 5	8	172	8	74
36	70	9	3	9	399	- 2	9	173	9	74
40	71	10	4	10	394	8	10	171	10	74
044	0 00071	11	0 00006	11	0 00383	- 14	11	0 00166	11	0 00072
48	71	2	8	2	366	0	2	159	2	69
52	70	3	11	3	344	5	3	150	3	66
56	68	4	15	4	317	28	4	139	4	62
60	66	5	19	5	87	3	5	126	5	57
064	0 00064	16	0 00023	16	0 00253	- 35	16	0 00112	16	0 00051
68	61	7	28	7	218	36	7	97	7	46
72	57	8	33	8	182	36	8	83	8	39
76	53	9	37	9	147	34	9	68	9	33
80	49	20	4	20	114	32	20	54	20	8
084	0 00045	21	0 00046	21	0 00083	- 29	21	0 00041	21	0 00023
88	40	2	50	2	56	25	2	30	2	18
92	36	3	53	3	34	20	3	21	3	14
96	32	4	55	4	17	14	4	14	4	10
100	8	5	56	5	6	8	5	10	5	8
104	0 00024	26	0 00057	26	0 00001	- 2	26	0 000 7	26	0 00006
08	20	7	57	7	3	+ 5	7	8	7	6
12	17	8	56	8	11	11	8	12	8	7
16	14	9	54	9	4	17	9	18	9	8
20	12	30	51	30	44	23	30	25	30	11
124	0 00010	31	0 00048	31	0 00069	+ 7	31	0 00036	31	0 00014
28	9	2	44	2	98	31	2	47	2	19
32	9	3	39	3	130	33	3	61	3	24
36	9	4	35	4	164	35	4	75	4	29
40	1	5	30	5	00	36	5	90	5	35
144	0 00011	36	0 00025	36	0 00236	+ 35	36	0 00105	36	0 00041
48	13	7	20	7	7	33	7	119	7	47
52	16	8	16	8	3	31	8	133	8	53
56	19	9	12	9	331	27	9	145	9	58
60	2	40	9	40	356	22	40	155	40	63
164	0 00026	41	0 00006	41	0 00375	+ 17	41	0 00163	41	0 00067
68	30	2	4	2	389	11	2	169	2	70
72	35	3	3	3	397	+ 5	3	172	3	72
76	39	4	3	4	399	- 2	4	173	4	74
80	43	5	4	5	394	8	5	171	5	74
184	0 00048	46	0 00006	46	0 00383	- 14	46	0 00166	46	0 00073
88	52	7	8	7	366	0	7	159	7	71
92	56	8	11	8	344	5	8	150	8	68
96	59	9	15	9	317	28	9	139	9	65
200	0 00063	50	0 00019	50	0 00287	- 32	50	0 00126	50	0 00061

0 t t + 0004

0 t t + 000

Appl d 0 t t + 00 00

5

0 t t + 0009

0 t t + 000

4

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXVII

Equation of Longitude

Argument P

I	2	3	I	2	3	I	2	3	I	2	3	I	2	3
P	Equation	$\Delta_{0^{\circ}1}$	P	Equation	$\Delta_{0^{\circ}1}$	P	Equation	$\Delta_{0^{\circ}1}$	P	Equation	$\Delta_{0^{\circ}1}$	P	Equation	$\Delta_{0^{\circ}1}$
1850.0	0.01505	+66	1860.0	0.02852	+15	1870.0	0.01310	-73	1880.0	0.02354	-39	1890.0	0.04885	0
.2	1636	66	.2	2887	20	.2	1171	66	.2	2274	42	.2	4877	-9
.4	1769	67	.4	2932	24	.4	1046	59	.4	2188	43	.4	4850	17
.6	1903	67	.6	2982	25	.6	937	52	.6	2101	44	.6	4811	23
.8	2037	67	.8	3032	27	.8	838	45	.8	2012	44	.8	4758	32
1851.0	0.02172	+68	1861.0	0.03088	+29	1871.0	0.00757	-36	1881.0	0.01927	-41	1891.0	0.04683	-41
.2	2308	69	.2	3146	30	.2	693	27	.2	1847	39	.2	4594	50
.4	2446	69	.4	3206	32	.4	646	20	.4	1771	36	.4	4484	58
.6	2584	69	.6	3274	35	.6	614	13	.6	1703	32	.6	4364	62
.8	2721	68	.8	3346	35	.8	600	-4	.8	1643	27	.8	4236	68
1852.0	0.02857	+68	1862.0	0.03411	+32	1872.0	0.00599	+2	1882.0	0.01598	-19	1892.0	0.04095	-74
.2	2992	67	.2	3475	32	.2	606	7	.2	1567	11	.2	3943	78
.4	3126	67	.4	3537	31	.4	628	13	.4	1554	-4	.4	3784	80
.6	3259	66	.6	3597	30	.6	656	16	.6	1551	+1	.6	3625	81
.8	3389	63	.8	3656	29	.8	691	21	.8	1557	8	.8	3462	82
1853.0	0.03513	+61	1863.0	0.03712	+28	1873.0	0.00738	+25	1883.0	0.01583	+17	1893.0	0.03299	-80
.2	3632	57	.2	3767	27	.2	791	28	.2	1624	24	.2	3142	77
.4	3741	53	.4	3820	27	.4	849	30	.4	1680	31	.4	2990	75
.6	3843	50	.6	3872	25	.6	909	31	.6	1746	36	.6	2842	72
.8	3939	45	.8	3920	24	.8	974	34	.8	1820	41	.8	2703	66
1854.0	0.04021	+38	1864.0	0.03969	+24	1874.0	0.01044	+36	1884.0	0.01910	+47	1894.0	0.02580	-59
.2	4090	31	.2	4015	21	.2	1116	37	.2	2007	51	.2	2469	53
.4	4144	24	.4	4052	17	.4	1193	38	.4	2113	55	.4	2370	47
.6	4184	18	.6	4085	16	.6	1269	39	.6	2228	58	.6	2280	44
.8	4214	11	.8	4115	13	.8	1350	41	.8	2344	59	.8	2198	36
1855.0	0.04227	+2	1865.0	0.04137	+10	1875.0	0.01431	+41	1885.0	0.02464	+61	1895.0	0.02135	-28
.2	4223	-6	.2	4153	+5	.2	1513	42	.2	2586	62	.2	2084	20
.4	4202	15	.4	4156	0	.4	1597	43	.4	2713	63	.4	2051	15
.6	4166	21	.6	4153	-2	.6	1683	44	.6	2838	63	.6	2026	12
.8	4118	28	.8	4143	10	.8	1773	45	.8	2963	63	.8	2008	6
1856.0	0.04055	-34	1866.0	0.04116	-16	1876.0	0.01865	+46	1886.0	0.03090	+63	1896.0	0.02002	-2
.2	3982	40	.2	4075	25	.2	1954	45	.2	3215	63	.2	2002	+1
.4	3895	45	.4	4017	32	.4	2042	44	.4	3340	62	.4	2008	6
.6	3802	47	.6	3950	37	.6	2130	43	.6	3462	61	.6	2024	10
.8	3706	49	.8	3870	45	.8	2215	42	.8	3583	60	.8	2044	10
1857.0	0.03606	-51	1867.0	0.03773	-52	1877.0	0.02296	+39	1887.0	0.03703	+59	1897.0	0.02066	+11
.2	3502	52	.2	3662	61	.2	2369	35	.2	3819	57	.2	2089	13
.4	3398	51	.4	3529	69	.4	2436	32	.4	3932	56	.4	2116	15
.6	3300	49	.6	3388	73	.6	2498	29	.6	4044	55	.6	2147	15
.8	3203	46	.8	3238	79	.8	2552	24	.8	4152	54	.8	2175	14
1858.0	0.03117	-41	1868.0	0.03075	-84	1878.0	0.02595	+20	1888.0	0.04259	+52	1898.0	0.02204	+15
.2	3045	33	.2	2903	88	.2	2625	12	.2	4362	50	.2	2235	16
.4	2985	29	.4	2721	91	.4	2641	5	.4	4458	46	.4	2266	16
.6	2926	29	.6	2538	93	.6	2648	+2	.6	4546	43	.6	2298	16
.8	2871	25	.8	2349	94	.8	2647	-5	.8	4630	39	.8	2328	15
1859.0	0.02835	-14	1869.0	0.02161	-93	1879.0	0.02628	-13	1889.0	0.04702	+34	1899.0	0.02360	+15
.2	2814	8	.2	1978	91	.2	2595	20	.2	4764	28	.2	2390	16
.4	2803	-1	.4	1799	88	.4	2547	25	.4	4816	23	.4	2422	16
.6	2809	+6	.6	1626	84	.6	2494	29	.6	4857	16	.6	2452	15
.8	2827	11	.8	1462	79	.8	2430	35	.8	4878	+7	.8	2483	15
1860.0	0.02852	+15	1870.0	0.01310	-73	1880.0	0.02354	-39	1890.0	0.04885	0	1900.0	0.02512	+14

Applied Constant: +0.02600.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXVII continued

Equation of Longitude

Argument P

P	Equation	$\Delta$ o	P	Equation	$\Delta$ o	P	Equation	$\Delta$	P	Equation	$\Delta$ o	P	Equation	$\Delta$ o	P	Equation	$\Delta$ o
1900 0	0251	+14	1910 0	001455	+64	1920 0	002801	+3	1930 0	000816	-51	1940 0	001546	-46	1950 0	004575	-21
2	2539	13	2	1584	65	2	769	35	2	72	4	2	1454	45	2	959	6
4	56	10	4	1714	65	4	284	37	4	649	34	4	1365	43	4	178	61
6	579	8	6	1845	66	6	2917	38	6	586	8	6	1819	40	6	101	6
8	594	6	8	1978	66	8	992	37	8	536	1	8	1002	-5	8	136	63
1901 0	0064	+	1911 0	002110	+67	1921 0	003065	+38	1931 0	0005	-13	1941 0	001138	-30	1951 0	00840	+
2	2604	-	2	45	67	2	3141	37	2	486	6	2	184	3	2	959	6
4	596	6	4	2376	66	4	3216	36	4	479	-1	4	1046	16	4	178	61
6	2579	11	6	509	66	6	3287	36	6	483	+4	6	1019	11	6	101	6
8	55	18	8	640	65	8	3359	35	8	495	9	8	1002	-5	8	136	63
1902 0	00507	5	1912 0	002768	+63	1922 0	03430	+35	1932 0	000519	+14	1942 0	001001	+4	1952 0	00840	+
2	45	30	2	893	61	2	3500	34	2	55	19	2	1018	13	2	959	6
4	387	35	4	3013	59	4	3564	3	4	593	21	4	1052	20	4	178	61
6	2311	43	6	317	56	6	369	3	6	639	24	6	1099	6	6	101	6
8	17	5	8	338	53	8	3690	30	8	689	26	8	1156	32	8	136	63
1903 0	0112	55	1913 0	003339	+48	1923 0	003747	+29	1933 0	000743	+8	1943 0	001230	+40	1953 0	00840	+
2	1998	61	2	3430	41	2	3807	8	2	801	30	2	1316	46	2	959	6
4	1869	65	4	3503	35	4	3860	25	4	862	31	4	1415	50	4	178	61
6	1738	68	6	3569	31	6	3908	3	6	94	31	6	1517	53	6	101	6
8	1599	7	8	3626	24	8	3952	1	8	986	33	8	1627	57	8	136	63
1904 0	001451	-73	1914 0	003664	+15	1924 0	003992	+18	1934 0	001055	+35	1944 0	001745	+61	1954 0	00840	+
2	135	74	2	3686	+6	2	425	15	2	117	36	2	1869	63	2	959	6
4	1154	75	4	3689	1	4	4051	11	4	100	37	4	1998	65	4	178	61
6	105	73	6	368	5	6	4070	8	6	174	37	6	2130	65	6	101	6
8	861	7	8	3665	13	8	4081	+	8	1349	38	8	2259	66	8	136	63
1905 0	00726	-66	1915 0	003630	-21	1925 0	004078	-4	1935 0	001424	+38	1945 0	02393	+67	1955 0	00840	+
2	599	61	2	3582	9	2	4065	11	2	1501	39	2	2526	66	2	959	6
4	483	55	4	3516	34	4	4034	18	4	1578	39	4	658	66	4	178	61
6	379	50	6	3447	37	6	399	23	6	1656	39	6	790	67	6	101	6
8	84	4	8	3367	43	8	3938	31	8	1733	38	8	2925	66	8	136	63
1906 0	00010	-34	1916 0	003275	-48	1926 0	003871	-39	1936 0	001807	+37	1946 0	003054	+65	1956 0	00840	+
2	150	25	2	3180	48	2	3786	49	2	1879	36	2	3184	64	2	959	6
4	112	16	4	3084	48	4	3679	56	4	1950	34	4	3309	63	4	178	61
6	87	-9	6	990	47	6	3561	61	6	2015	31	6	3437	64	6	101	6
8	77	0	8	2897	46	8	3433	68	8	073	27	8	3563	62	8	136	63
1907 0	00086	+7	1917 0	00807	-43	1927 0	003289	-75	1937 0	002122	+21	1947 0	003684	+60	1957 0	00840	+
2	106	15	2	272	40	2	3133	80	2	2158	16	2	382	58	2	959	6
4	146	24	4	2648	35	4	968	86	4	2184	11	4	3916	56	4	178	61
6	200	9	6	582	31	6	790	92	6	200	+7	6	4026	54	6	101	6
8	26	34	8	56	5	8	2607	93	8	210	0	8	4133	52	8	136	63
1908 0	000337	+41	1918 0	002483	18	1928 0	00240	-95	1938 0	002201	-7	1948 0	004232	+47	1958 0	00840	+
2	45	46	2	454	11	2	229	95	2	2181	14	2	4321	41	2	959	6
4	50	49	4	441	-4	4	041	94	4	2146	20	4	4397	36	4	178	61
6	60	52	6	437	0	6	1855	9	6	2101	26	6	4466	34	6	101	6
8	77	55	8	443	+7	8	1673	89	8	04	31	8	4530	28	8	136	63
1909 0	00840	+58	1919 0	002463	+13	1929 0	00151	-84	1939 0	001978	-36	1949 0	004579	+19	1959 0	00840	+
2	959	6	2	493	18	2	1339	77	2	1900	40	2	4610	10	2	959	6
4	178	61	4	2535	23	4	1192	71	4	1818	42	4	4620	+2	4	178	61
6	101	6	6	583	26	6	105	67	6	1730	45	6	4619	-3	6	101	6
8	136	63	8	639	9	8	924	59	8	1639	46	8	4608	11	8	136	63
1910 0	001455	+64	1920 0	002801	+3	1930 0	000816	-51	1940 0	001546	-46	1950 0	004575	-21			



# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXVII continued

Equation of Longitude

Argument P

1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
P	Equation	$\Delta_{0^{\circ}1}$	P	Equation	$\Delta_{0^{\circ}1}$	P	Equation	$\Delta_{0^{\circ}1}$	P	Equation	$\Delta_{0^{\circ}1}$	P	Equation	$\Delta_{0^{\circ}1}$
1950.0	0.04575	-21	1960.0	0.02849	+8	1970.0	0.01941	+65	1980.0	0.03232	+43	1990.0	0.01183	-25
.2	4524	29	.2	2862	+5	.2	2070	65	.2	3320	44	.2	1140	17
.4	4458	38	.4	2867	0	.4	2199	66	.4	3409	44	.4	1114	10
.6	4374	44	.6	2862	-4	.6	2332	66	.6	3496	43	.6	1099	-6
.8	4279	52	.8	2851	9	.8	2462	64	.8	3581	42	.8	1092	0
1951.0	0.04167	-59	1961.0	0.02826	-16	1971.0	0.02589	+64	1981.0	0.03665	+42	1991.0	0.01099	+6
.2	4046	63	.2	2789	22	.2	2718	64	.2	3749	41	.2	1114	11
.4	3914	68	.4	2739	27	.4	2843	62	.4	3828	39	.4	1142	15
.6	3775	71	.6	2681	33	.6	2965	61	.6	3905	39	.6	1174	17
.8	3631	73	.8	2607	40	.8	3087	58	.8	3982	38	.8	1210	19
1952.0	0.03483	-74	1962.0	0.02520	-47	1972.0	0.03197	+53	1982.0	0.04058	+37	1992.0	0.01250	+23
.2	3335	74	.2	2418	55	.2	3301	50	.2	4129	35	.2	1301	26
.4	3188	72	.4	2299	61	.4	3397	45	.4	4197	33	.4	1355	26
.6	3047	70	.6	2176	63	.6	3482	41	.6	4262	32	.6	1406	26
.8	2908	67	.8	2049	67	.8	3559	35	.8	4324	30	.8	1462	28
1953.0	0.02778	-62	1963.0	0.01908	-73	1973.0	0.03621	+27	1983.0	0.04383	+28	1993.0	0.01518	+30
.2	2662	56	.2	1759	75	.2	3669	19	.2	4436	25	.2	1582	32
.4	2554	51	.4	1607	76	.4	3697	12	.4	4482	22	.4	1645	32
.6	2459	45	.6	1455	77	.6	3717	7	.6	4522	19	.6	1709	32
.8	2373	40	.8	1299	76	.8	3725	+1	.8	4556	14	.8	1774	33
1954.0	0.02302	-34	1964.0	0.01148	-74	1974.0	0.03720	-9	1984.0	0.04579	+9	1994.0	0.01840	+35
.2	2241	25	.2	1001	71	.2	3692	17	.2	4593	+3	.2	1915	37
.4	2200	18	.4	863	67	.4	3652	22	.4	4591	-3	.4	1986	36
.6	2170	14	.6	735	62	.6	3604	27	.6	4580	10	.6	2057	35
.8	2148	9	.8	614	56	.8	3546	33	.8	4553	16	.8	2125	35
1955.0	0.02135	-5	1965.0	0.00511	-49	1975.0	0.03474	-38	1985.0	0.04516	-23	1995.0	0.02197	+36
.2	2130	-1	.2	420	41	.2	3396	41	.2	4461	33	.2	2268	34
.4	2132	+4	.4	348	33	.4	3309	44	.4	4386	40	.4	2333	32
.6	2146	10	.6	290	26	.6	3222	44	.6	4300	46	.6	2396	31
.8	2171	14	.8	246	17	.8	3133	45	.8	4202	54	.8	2456	28
1956.0	0.02200	+14	1966.0	0.00222	-8	1976.0	0.03044	-43	1986.0	0.04086	-62	1996.0	0.02508	+24
.2	2228	15	.2	213	+1	.2	2961	40	.2	3955	70	.2	2553	20
.4	2260	17	.4	226	9	.4	2884	37	.4	3807	76	.4	2589	15
.6	2294	17	.6	249	15	.6	2812	34	.6	3651	80	.6	2613	11
.8	2328	18	.8	284	21	.8	2748	29	.8	3487	85	.8	2633	+6
1957.0	0.02365	+18	1967.0	0.00335	+28	1977.0	0.02696	-24	1987.0	0.03314	-89	1997.0	0.02638	-1
.2	2399	18	.2	396	35	.2	2652	18	.2	3133	92	.2	2630	8
.4	2436	18	.4	473	40	.4	2626	10	.4	2948	92	.4	2606	15
.6	2473	19	.6	556	43	.6	2612	-5	.6	2765	92	.6	2573	19
.8	2510	18	.8	646	48	.8	2606	+1	.8	2581	91	.8	2532	25
1958.0	0.02545	+17	1968.0	0.00747	+51	1978.0	0.02618	+8	1988.0	0.02400	-90	1998.0	0.02474	-32
.2	2578	17	.2	851	54	.2	2641	16	.2	2223	86	.2	2406	37
.4	2614	18	.4	962	56	.4	2680	21	.4	2058	80	.4	2326	41
.6	2651	18	.6	1076	58	.6	2724	24	.6	1902	76	.6	2242	44
.8	2686	17	.8	1194	59	.8	2777	29	.8	1753	71	.8	2150	46
1959.0	0.02721	+16	1969.0	0.01314	+61	1979.0	0.02839	+32	1989.0	0.01621	-62	1999.0	0.02058	-48
.2	2752	15	.2	1437	61	.2	2906	36	.2	1505	54	.2	1958	49
.4	2781	15	.4	1558	62	.4	2982	39	.4	1406	47	.4	1863	47
.6	2810	13	.6	1683	64	.6	3062	41	.6	1318	41	.6	1771	47
.8	2832	10	.8	1812	65	.8	3147	43	.8	1241	34	.8	1677	46
1960.0	0.02849	+8	1970.0	0.01941	+65	1980.0	0.03232	+43	1990.0	0.01183	-25	2000.0	0.01589	-44

Applied Constant:  $+0^{\circ}02600$ .

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXVIII

Equation of Longitude

Argument Q

Q	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equation	$\Delta$	$\frac{1}{2}\Delta^2$
000	004400	-147	0	050	00323	+29	+	100	0068	+136	-1	150	007843	-83	-3
001	4253	147	0	051	354	34	3	001	6143	134	2	051	7758	87	2
002	4106	147	0	052	391	4	3	002	675	132	1	052	7669	91	
003	3959	147	0	053	433	44		003	6406	129		053	7576	95	2
004	3813	146	0	054	479	49	3	004	6533	126	1	054	7479	99	
005	3668	145	0	055	531	54	2	005	6658	124	2	055	7378	103	
006	003524	-144	0	056	00587	+59	+3	106	006780	+121	-1	156	007274	-106	-
007	3380	143	+1	057	648	64	3	007	6900	118	2	057	7166	110	2
008	3238	141	1	058	714	69	3	008	7016	115	2	058	7054	114	2
009	3098	140	1	059	785	73	2	009	7129	111	2	059	6939	117	2
010	2959	138	1	060	860	77		010	7238	108		060	6821	120	
011	28	-136	+1	061	000939	+82	+3	111	007344	+104	-2	161	006700	-123	-2
012	687	134	1	062	103	86		012	7446	100	2	062	6576	126	2
013	554	13	1	063	1111	90		013	7544	96		063	6449	128	1
014	43	130	2	064	103	94		014	7638	93	2	064	6320	131	2
015	295	127	1	065	199	98		015	7729	89	3	065	6188	133	1
016	002169	-15	+	066	001399	+102	+2	116	007815	+84	-2	166	006054	-135	-1
017	046	12		067	1503	106	2	017	7897	80	3	067	5918	137	1
018	196	118	2	068	1610	109	2	018	7974	75	2	068	5780	139	1
019	1810	115	1	069	1721	113	2	019	8047	71	2	069	5640	141	1
020	1696	11		070	1835	116	2	020	8116	66	3	070	5499	142	1
021	1586	-109	+	071	001953	+119	+1	121	008179	+61	-2	171	005357	-143	-1
022	1479	105	3	072	073	122	2	022	8238	57	2	072	5213	145	1
023	1377	101	1	073	2197	125	1	023	8293	52	3	073	5068	146	1
024	1277	98	3	074	233	128		024	8342	48	3	074	4922	146	0
025	1182	93		075	2452	130	1	025	8386	4	3	075	4776	147	-1
026	001091	-89	+2	076	00583	+13	+1	126	008426	+37	-3	176	004629	-147	0
027	1004	85	2	077	2716	135	2	027	8460	3	2	077	448	147	0
028	91	81	3	078	852	137	1	028	8490	27	3	078	4335	147	0
029	843	76	2	079	2989	139		029	8514	21	4	079	4188	147	0
030	769	7	2	080	3129	141	1	030	8533	16	2	080	4041	147	+1
031	000699	-68	+3	081	03270	+142	+1	131	008547	+12	-3	181	003895	-146	0
032	634	63	3	082	341	143	1	032	8556	6	3	082	3749	146	+1
033	574	58	3	083	3555	144	+1	033	8559	+1	3	083	3604	145	1
034	519	53	2	084	3700	145	0	034	8557	-5	3	084	3460	143	+1
035	468	48	3	085	3845	146	+1	035	8550	10	3	085	3318	14	0
036	00423	-43	+	086	003992	+147	-1	136	008538	15	-3	186	003176	141	+1
037	38	38	3	087	4138	147	+1	037	851	20	3	087	3036	139	1
038	347	33		088	485	147	0	038	8498	25		088	2898	137	1
039	316	8	3	089	443	148	+1	039	8471	30	3	089	2762	135	1
040	291	3	3	090	4580	147	-1	040	8438	35	2	090	2628	133	1
041	0071	-18	+3	091	004726	+147	+1	141	008401	-40	-3	191	002496	-131	+1
042	256	13	3	092	4873	147	-1	042	8358	46	3	092	2366	129	2
043	246	8	3	093	519	146	1	043	8310	51	3	093	239	126	1
044	41	-2	3	094	5164	145	1	044	8257	55		094	114	123	2
045	24	+4	3	095	5308	144	1	045	800	60	3	095	1993	120	2
046	00048	+9	+3	096	005451	+143	-1	146	008138	-65	-3	196	001874	-117	+2
047	259	14	3	097	5593	141	1	047	8071	70	3	097	1759	114	2
048	75	19	3	098	5733	140	1	048	7999	74		098	1647	111	2
049	296	24	3	099	5872	138		049	793	78		099	1538	107	3
050	00033	+29	+2	100	00608	+136	-1	150	007843	-83	-3	200	001434	-102	+2

Applied to 4400

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXVIII continued

Equation of Longitude

Argument Q

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Q	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$
d 2'00	o'01434	-103	+2	d 2'50	o'02127	+124	+2	d 3'00	o'08263	+55	-2	d 3'50	o'05149	-146	-1
01	1333	100	2	51	2252	126	1	01	8315	50	3	51	5004	146	0
02	1234	96	2	52	2380	130	2	02	8363	46	3	52	4858	147	0
03	1141	91	2	53	2509	131	1	03	8404	40	3	53	4711	147	0
04	1053	87	2	54	2641	133	1	04	8442	35	3	54	4564	147	0
05	967	83	2	55	2776	137	2	05	8474	30	2	55	4417	147	0
2'06	o'00886	-79	+2	2'56	o'02912	+138	+1	3'06	o'08501	+24	-3	3'56	o'04270	-147	0
07	810	74	2	57	3051	141	2	07	8522	18	4	57	4123	147	0
08	738	70	2	58	3191	142	1	08	8540	14	2	58	3976	146	+1
09	669	66	2	59	3333	143	1	09	8552	9	3	59	3831	146	0
10	607	61	2	60	3475	144	1	10	8558	+3	3	60	3685	145	+1
2'11	o'00549	-56	+2	2'61	o'03619	+145	+1	3'11	o'08559	-2	-3	3'61	o'03540	-144	+1
12	496	51	2	62	3764	145	0	12	8554	8	3	62	3397	142	+1
13	447	46	2	63	3909	147	-1	13	8545	13	3	63	3255	142	0
14	404	41	2	64	4057	146	+1	14	8531	18	3	64	3114	140	+1
15	366	36	2	65	4203	147	0	15	8512	23	3	65	2975	138	1
2'16	o'00333	-31	+2	2'66	o'04350	+147	+1	3'16	o'08487	-27	-2	3'66	o'02838	-136	+1
17	304	26	2	67	4497	148	0	17	8457	32	3	67	2702	134	1
18	281	21	3	68	4645	147	0	18	8422	37	2	68	2569	132	1
19	264	16	3	69	4791	147	0	19	8383	43	3	69	2438	130	1
20	251	11	3	70	4938	147	0	20	8337	49	3	70	2309	127	2
2'21	o'00243	-6	+3	2'71	o'05083	+146	-1	3'21	o'08287	-54	-3	3'71	o'02183	-125	+1
22	240	0	3	72	5228	144	1	22	8232	57	2	72	2060	121	2
23	244	+6	3	73	5372	143	1	23	8173	63	3	73	1941	118	2
24	252	11	3	74	5514	142	1	24	8109	68	3	74	1823	115	2
25	266	16	3	75	5655	140	1	25	8040	73	3	75	1709	112	2
2'26	o'00284	+21	+3	2'76	o'05795	+139	-1	3'26	o'07966	-76	-2	3'76	o'01598	-109	+2
27	307	26	3	77	5932	136	2	27	7888	80	2	77	1491	104	3
28	336	31	3	78	6068	135	1	28	7806	86	3	78	1389	100	2
29	369	36	3	79	6202	132	1	29	7719	89	2	79	1289	97	2
30	409	42	3	80	6333	131	2	30	7628	93	2	80	1193	93	2
2'31	o'00453	+46	+2	2'81	o'06462	+127	-1	3'31	o'07534	-97	-2	3'81	o'01102	-89	+2
32	501	51	3	82	6589	125	2	32	7435	101	2	82	1014	85	2
33	555	56	2	83	6712	122	1	33	7332	105	2	83	931	81	2
34	613	61	3	84	6833	120	2	34	7227	108	2	84	852	76	2
35	677	66	3	85	6952	116	1	35	7117	112	2	85	777	72	2
2'36	o'00745	+71	+3	2'86	o'07066	+113	-2	3'36	o'07003	-116	-2	3'86	o'00707	-68	+3
37	818	75	2	87	7178	109	2	37	6887	119	2	87	642	63	3
38	894	79	2	88	7285	106	2	38	6768	121	2	88	581	58	3
39	976	84	3	89	7389	102	2	39	6645	124	2	89	525	53	2
40	1061	88	2	90	7490	98	2	40	6520	127	2	90	474	48	3
2'41	o'01151	+92	+2	2'91	o'07586	+94	-2	3'41	o'06393	-129	-1	3'91	o'00428	-43	+2
42	1245	96	2	92	7679	91	2	42	6262	132	2	92	387	38	3
43	1343	100	2	93	7768	87	2	43	6129	134	1	93	351	33	2
44	1444	104	2	94	7852	82	2	44	5994	136	1	94	319	28	3
45	1550	108	2	95	7932	78	3	45	5858	138	1	95	294	23	3
2'46	o'01659	+111	+2	2'96	o'08007	+73	-2	3'46	o'05719	-140	-1	3'96	o'00273	-18	+3
47	1771	115	2	97	8078	69	2	47	5578	142	1	97	258	13	3
48	1887	118	2	98	8145	64	2	48	5436	143	1	98	247	8	3
49	2006	120	1	99	8205	59	2	49	5294	144	1	99	241	-2	3
2'50	o'02127	+124	+2	3'00	o'08263	+55	-2	3'50	o'05149	-146	-1	4'00	o'00242	+4	+3

Added Constant: +0'04400.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

XXIX

R	Equation	$\Delta_{\text{od or}}$	R	Equation	$\Delta_{\text{or}}$
0 00	0 01300	- 45	1 00	01791	+ 41
02	1210	45	02	1871	4
04	1121	44	04	1949	38
06	1034	44	06	024	37
08	948	43	08	2095	35
10	862	4	10	163	33
0 12	0 00779	- 41	1 12	00 6	+ 30
14	699	39	14	2285	8
16	62	38	16	338	6
18	547	36	18	2387	3
20	477	34	20	430	20
0 22	0 00411	- 32	1 22	0 02467	+ 17
24	350	30	24	499	14
26	93	27	26	524	11
28	241	4	28	544	8
30	195	2	30	2557	5
0 32	0 00154	- 19	1 32	0 0 563	+ 2
34	119	16	34	564	- 1
36	90	13	36	2559	5
38	67	10	38	546	8
40	50	7	40	5 7	11
0 42	0 00039	4	1 42	0 0 503	- 14
44	35	- 1	44	47	17
46	37	+	46	436	19
48	45	6	48	394	2
50	60	9	50	346	5
0 52	0 00081	+ 1	1 52	0 02 93	- 28
54	108	14	54	2235	30
56	141	18	56	173	32
58	180	21	58	2106	34
60	24	4	60	035	36
0 62	0 00274	+ 26	1 62	0 1960	- 38
64	329	29	64	188	40
66	388	31	66	1801	41
68	45	33	68	1718	42
70	5 1	36	70	1633	43
0 72	0 00593	+ 37	1 72	0 01546	- 44
74	669	39	74	1457	44
76	748	40	76	1368	45
78	830	4	78	1 78	45
80	914	43	80	1189	45
0 82	0 01001	+ 44	1 82	0 01100	- 44
84	1 88	44	84	101	44
86	1176	45	86	9 6	43
88	1 66	45	88	84	4
90	1356	45	90	76	41
0 92	01445	+ 45	1 92	0 00680	- 39
94	1534	44	94	6 3	37
96	1621	43	96	530	36
98	1707	42	98	461	34
1 00	0 01791	+ 41	2 00	00397	- 31

Appl d C t t + 3

XXX

S	Equation
0 00	0 00080
04	71
08	62
12	53
16	44
20	36
0 24	0 0003
28	24
32	19
36	16
40	14
0 44	0 00013
48	14
52	15
56	18
60	22
0 64	0 00028
68	35
72	4
76	50
80	59
0 84	0 00069
88	78
92	88
96	97
1 00	106
1 04	0 00115
08	12
12	129
16	135
20	140
1 24	0 00144
28	146
32	147
36	147
40	146
1 44	0 00143
48	139
52	133
56	1 6
60	119
1 64	0 00111
68	103
72	93
76	83
80	74
1 84	0 00065
88	56
92	47
96	39
2 00	0 0003

Q t t + 0008

XXXI

T	Equation
a	
0 0	0 00020
1	14
2	10
3	6
4	4
5	4
0 6	0 00006
7	10
8	15
9	21
1 0	26
1 1	0 00031
2	34
3	36
4	36
5	34
1 6	0 00029
7	24
8	19
9	13
2 0	0 00009

Q t t + 00

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXXII

Equation of Longitude

Argument U

1	2	3	1	2	3	1	2	3	1	2	3
U	Equation	$\Delta_{0^d 0^m}$	U	Equation	$\Delta_{0^d 0^m}$	U	Equation	$\Delta_{0^d 0^m}$	U	Equation	$\Delta_{0^d 0^m}$
d 0'00	0'00100	- 3,5	d 1'00	0'00137	+ 3,1	d 2'00	0'00031	- 2,5	d 3'00	0'00190	+ 1,3
'04	86	3,4	'04	149	2,9	'04	22	2,0	'04	194	0,8
'08	73	3,3	'08	160	2,6	'08	15	1,6	'08	196	+ 0,4
'12	60	3,1	'12	170	2,4	'12	9	1,3	'12	197	- 0,1
'16	48	2,8	'16	179	2,0	'16	5	0,6	'16	195	0,8
'20	38	2,5	'20	186	1,5	'20	4	- 0,1	'20	191	1,1
0'24	0'00028	- 2,3	1'24	0'00191	+ 1,0	2'24	0'00004	+ 0,3	3'24	0'00186	- 1,5
'28	20	1,9	'28	194	0,6	'28	6	0,6	'28	179	2,0
'32	13	1,5	'32	196	+ 0,3	'32	9	1,3	'32	170	2,4
'36	8	1,0	'36	196	- 0,4	'36	16	1,8	'36	160	2,6
'40	5	- 0,5	'40	193	0,9	'40	23	2,0	'40	149	3,0
0'44	0'00004	0,0	1'44	0'00189	- 1,3	2'44	0'00032	+ 2,4	3'44	0'00136	- 3,1
'48	5	+ 0,4	'48	183	1,8	'48	42	2,6	'48	124	3,3
'52	7	0,9	'52	175	2,1	'52	53	3,0	'52	110	3,5
'56	12	1,4	'56	166	2,4	'56	66	3,3	'56	96	3,5
'60	18	1,8	'60	156	2,8	'60	79	3,3	'60	82	3,4
0'64	0'00026	+ 2,3	1'64	0'00144	- 3,0	2'64	0'00093	+ 3,5	3'64	0'00070	- 3,1
'68	36	2,5	'68	132	3,1	'68	107	3,3	'68	57	3,0
'72	46	2,8	'72	119	3,4	'72	119	3,1	'72	46	2,8
'76	58	3,1	'76	105	3,5	'76	132	3,2	'76	35	2,6
'80	71	3,3	'80	91	3,4	'80	145	3,0	'80	25	2,1
0'84	0'00084	+ 3,4	1'84	0'00078	- 3,3	2'84	0'00156	+ 2,8	3'84	0'00018	- 1,8
'88	98	3,4	'88	65	3,1	'88	167	2,5	'88	11	1,4
'92	111	3,3	'92	53	2,9	'92	176	2,1	'92	7	0,9
'96	124	3,3	'96	42	2,8	'96	184	1,8	'96	4	- 0,4
1'00	0'00137	+ 3,1	2'00	0'00031	- 2,5	3'00	0'00190	+ 1,3	4'00	0'00004	+ 0,4

Applied Constant: +0'00000.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXXIII      Equation of Variation of Radius Vector, Doubled      Argument A

A	Equation	$\frac{\Delta}{\text{od or}}$	A	Equation	$\frac{\Delta}{\text{od o}}$	A	Equation	$\frac{\Delta}{\text{od or}}$	A	Equation	$\frac{\Delta}{\text{od or}}$
0 00	- 0201	0	1 00	+ 00298	+ 33	2 00	+ 01587	- 14	3 00	- 01244	- 27
02	2011	+ 1	02	363	33	02	1558	15	02	1297	26
04	2007	3	04	428	32	04	1527	16	04	1349	26
06	2001	4	06	49	32	06	1494	17	06	1400	25
08	1993	5	08	555	31	08	1458	18	08	1448	24
10	1981	6	10	617	31	10	1421	19	10	1495	23
0 12	- 01970	+ 7	1 12	+ 00679	+ 31	2 12	+ 01383	- 20	3 12	- 01541	- 22
14	1953	9	14	740	30	14	134	21	14	1584	1
16	1934	10	16	799	29	16	1299	2	16	1626	21
18	1914	11	18	857	29	18	1 54	23	18	1666	19
20	1891	1	20	913	28	20	1208	24	20	1703	18
0 22	- 01866	+ 13	1 22	+ 00969	+ 28	2 22	+ 01160	- 25	3 22	- 01739	- 18
24	1838	14	24	1023	7	24	1110	25	24	1773	17
26	1809	15	26	1075	26	26	1059	26	26	1805	15
28	1777	17	28	11 6	5	28	1006	27	28	1834	14
30	1743	18	30	1176	25	30	952	28	30	186	13
0 32	- 01707	+ 19	1 32	+ 01224	+ 24	2 32	+ 00896	- 28	3 32	- 01887	- 12
34	1669	20	34	1270	23	34	839	29	34	1910	11
36	1629	21	36	1314		36	781	29	36	1931	10
38	1587	22	38	1356	21	38	7	30	38	1949	9
40	1543	3	40	1396	20	40	66	30	40	1965	8
0 42	- 01497	+ 24	1 42	+ 01435	+ 19	2 42	+ 00601	- 31	3 42	- 01979	- 6
44	1449	24	44	147	18	44	539	31	44	1990	5
46	1400	5	46	1506	17	46	476	3	46	1999	4
48	1349	6	48	1539	16	48	41	32	48	2006	3
50	1 96	7	50	1569	15	50	347	33	50	2010	- 2
0 52	- 0124	+ 27	1 52	+ 01597	+ 14	2 52	+ 00282	- 33	3 52	- 02012	0
54	1188	8	54	1623	12	54	217	33	54	2011	+ 1
56	1131	29	56	1647	11	56	151	33	56	20 8	2
58	1073	29	58	1669	10	58	84	33	58	2003	3
60	1014	30	60	1688	9	60	+ 18	33	60	1995	5
0 62	- 0953	+ 31	1 62	+ 01705	+ 8	2 62	- 00049	- 34	3 62	- 01985	+ 6
64	89	31	64	17 0	7	64	116	34	64	1973	7
66	830	32	66	1733	6	66	183	34	66	1958	8
68	766	3	68	174	4	68	250	34	68	1941	9
70	702	3	70	1750	3	70	317	33	70	1921	10
0 72	- 0 637	+ 33	1 72	+ 01756	+ 2	2 72	- 00383	- 33	3 72	- 01900	+ 11
74	57	33	74	1759	+ 1	74	449	33	74	1876	13
76	506	33	76	1760	0	76	515	33	76	1850	14
78	440	34	78	1758	- 2	78	580	33	78	1821	15
80	373	34	80	1754	3	80	645	32	80	1791	16
0 82	- 00306	+ 34	1 82	+ 01748	- 4	2 82	- 00709	- 32	3 82	- 01758	+ 17
84	38	34	84	1739	5	84	772	32	84	1723	18
86	171	34	86	1729	6	86	835	31	86	1687	19
88	103	34	88	1715	7	88	897	31	88	1648	20
90	- 35	34	90	1700	8	90	958	30	90	1607	21
0 92	+ 0003	+ 34	1 92	+ 0168	- 10	2 92	- 01017	- 30	3 92	- 01565	+ 22
94	99	33	94	1662	11	94	1076	29	94	15 0	23
96	165	33	96	1639	12	96	1133	28	96	1474	24
98	23	33	98	1614	13	98	1189	28	98	14 6	24
1 00	+ 00298	+ 33	2 00	+ 01587	- 14	3 00	- 01244	- 27	4 00	- 01377	+ 25

Th Eq tl fthl T bl m t b ppl m ted by th f T bl XXXIV XXXV XXXVI

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXXIII continued Equation of Variation of Radius Vector, Doubled Argument A

1	2	3	1	2	3	1	2	3	1	2	3
A	Equation	$\Delta_{0^d.01}$	A	Equation	$\Delta_{0^d.01}$	A	Equation	$\Delta_{0^d.01}$	A	Equation	$\Delta_{0^d.01}$
<sup>d</sup> 4.00	- .01377	+ 25	<sup>d</sup> 5.00	+ .01509	+ 17	<sup>d</sup> 6.00	+ .00463	- 32	<sup>d</sup> 7.00	- .02004	- 3
.02	1326	26	.02	1542	16	.02	399	32	.02	2009	2
.04	1273	27	.04	1571	14	.04	334	33	.04	2012	- 1
.06	1219	28	.06	1599	14	.06	268	33	.06	2012	+ 1
.08	1163	28	.08	1626	13	.08	202	33	.08	2010	2
.10	1107	28	.10	1649	11	.10	135	34	.10	2005	3
4.12	- .01050	+ 29	5.12	+ .01671	+ 10	6.12	+ .00068	- 34	7.12	- .01998	+ 4
.14	991	30	.14	1690	9	.14	+ 1	34	.14	1988	6
.16	930	31	.16	1707	8	.16	- 66	34	.16	1975	7
.18	869	31	.18	1721	7	.18	134	34	.18	1960	8
.20	807	31	.20	1734	6	.20	201	34	.20	1944	9
4.22	- .00744	+ 32	5.22	+ .01743	+ 4	6.22	- .00268	- 34	7.22	- .01924	+ 10
.24	680	32	.24	1751	4	.24	336	34	.24	1903	11
.26	616	32	.26	1757	2	.26	403	34	.26	1880	13
.28	551	33	.28	1760	+ 1	.28	470	33	.28	1853	14
.30	485	33	.30	1760	- 1	.30	536	33	.30	1825	15
4.32	- .00419	+ 33	5.32	+ .01758	- 2	6.32	- .00602	- 33	7.32	- .01794	+ 16
.34	353	33	.34	1754	3	.34	667	32	.34	1761	17
.36	286	34	.36	1748	4	.36	731	32	.36	1727	18
.38	219	34	.38	1739	5	.38	795	32	.38	1690	19
.40	152	33	.40	1728	6	.40	858	31	.40	1651	20
4.42	- .00086	+ 33	5.42	+ .01714	- 8	6.42	- .00920	- 31	7.42	- .01609	+ 21
.44	- 19	34	.44	1698	9	.44	981	30	.44	1566	22
.46	+ 48	33	.46	1680	10	.46	1040	30	.46	1522	23
.48	114	33	.48	1660	11	.48	1099	29	.48	1476	24
.50	181	33	.50	1637	12	.50	1156	29	.50	1427	25
4.52	+ .00247	+ 33	5.52	+ .01612	- 13	6.52	- .01213	- 28	7.52	- .01377	+ 25
.54	312	32	.54	1585	14	.54	1268	27	.54	1326	26
.56	376	32	.56	1556	15	.56	1321	26	.56	1273	27
.58	441	32	.58	1525	16	.58	1373	26	.58	1218	28
.60	504	32	.60	1491	18	.60	1423	25	.60	1162	29
4.62	+ .00567	+ 31	5.62	+ .01455	- 19	6.62	- .01471	- 24	7.62	- .01104	+ 29
.64	628	31	.64	1417	19	.64	1518	23	.64	1046	29
.66	689	30	.66	1378	20	.66	1563	22	.66	987	30
.68	749	30	.68	1336	21	.68	1606	21	.68	926	31
.70	808	29	.70	1293	22	.70	1647	20	.70	864	31
4.72	+ .00865	+ 28	5.72	+ .01249	- 23	6.72	- .01686	- 19	7.72	- .00801	+ 32
.74	921	28	.74	1202	24	.74	1723	18	.74	738	32
.76	976	27	.76	1154	25	.76	1758	17	.76	673	33
.78	1030	27	.78	1104	26	.78	1791	16	.78	608	33
.80	1082	26	.80	1051	27	.80	1823	15	.80	542	33
4.82	+ .01132	+ 25	5.82	+ .00998	- 27	6.82	- .01851	- 14	7.82	- .00476	+ 33
.84	1180	24	.84	944	28	.84	1877	13	.84	409	34
.86	1228	24	.86	888	28	.86	1901	11	.86	342	34
.88	1274	23	.88	831	29	.88	1922	10	.88	275	34
.90	1318	22	.90	772	30	.90	1942	10	.90	208	34
4.92	+ .01360	+ 21	5.92	+ .00712	- 30	6.92	- .01960	- 8	7.92	- .00140	+ 34
.94	1400	20	.94	651	31	.94	1974	7	.94	72	34
.96	1439	19	.96	589	31	.96	1986	6	.96	- 5	34
.98	1475	18	.98	527	32	.98	1996	5	.98	+ 62	34
5.00	+ .01509	+ 17	6.00	+ .00463	- 32	7.00	- .02004	- 3	8.00	+ .00129	+ 34

Applied Constant : - .00120.

The Equation of this Table must be supplemented by those of Tables XXXIV, XXXV, XXXVI.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Variation of Radius Vector, Doubled

XXXIV

D	Equation
00	+ 00003
2	4
4	7
6	12
8	17
10	3
12	+ 00029
4	33
6	36
8	37
20	36
22	+ 00032
4	8
6	2
8	16
30	10
32	+ 0 006
4	4
6	3
8	5
40	+ 008

C t t +

XXXV

E	Equation	E	Equation
00	+ 00008	20	+ 001 7
1	9	1	1 2
2	12	2	115
3	16	3	107
4	23	4	98
5	31	5	88
06	+ 00040	26	+ 00077
7	50	7	66
8	60	8	55
9	71	9	45
10	8	30	35
11	+ 0093	31	+ 00027
2	10	2	0
3	111	3	14
4	119	4	10
5	1 5	5	8
16	+ 001 9	36	+ 000 8
7	131	7	10
8	132	8	14
9	131	9	19
20	+ 00127	40	+ 000 7

Appli d C t t + 0007

XXXVI

F	Equation
00	+ 00004
2	6
4	10
6	17
8	26
10	35
12	+ 00044
4	50
6	55
8	56
20	54
22	+ 00049
4	42
6	33
8	24
30	15
32	+ 00009
4	5
6	4
8	6
40	+ 0001

0 t t + 00



# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXXVII

Equation of Latitude

Argument Q

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Q	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$	Q	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$
a				d				a				a			
0.00	0.60000	+954	0	0.50	1.01772	+607	-7	1.00	1.12958	-189	-9	1.50	0.85280	-844	-4
.01	.60954	954	0	.51	1.02372	594	7	.01	1.12760	206	9	.51	.84432	852	4
.02	.61908	954	0	.52	1.02959	580	7	.02	1.12546	223	9	.52	.83576	858	4
.03	.62862	954	-1	.53	1.03532	566	7	.03	1.12315	239	8	.53	.82715	866	4
.04	.63815	952	1	.54	1.04091	553	7	.04	1.12069	255	8	.54	.81845	873	4
.05	.64766	951	1	.55	1.04637	539	7	.05	1.11806	271	9	.55	.80969	880	4
0.06	0.65716	+949	-1	0.56	1.05169	+525	-8	1.06	1.11526	-288	-8	1.56	0.80085	-887	-3
.07	.66664	947	1	.57	1.05686	510	7	.07	1.11230	304	8	.57	.79196	893	3
.08	.67610	945	1	.58	1.06189	496	7	.08	1.10918	320	8	.58	.78300	899	3
.09	.68554	943	2	.59	1.06678	482	8	.09	1.10590	336	8	.59	.77399	904	3
.10	.69495	940	2	.60	1.07152	467	8	.10	1.10246	352	8	.60	.76491	908	3
0.11	0.70433	+937	-2	0.61	1.07611	+452	-8	1.11	1.09887	-367	-8	1.61	0.75581	-914	-3
.12	.71368	933	2	.62	1.08055	437	8	.12	1.09513	383	8	.62	.74664	919	3
.13	.72299	929	2	.63	1.08484	422	8	.13	1.09123	398	8	.63	.73743	923	2
.14	.73226	925	2	.64	1.08898	407	8	.14	1.08717	414	8	.64	.72818	927	2
.15	.74149	921	2	.65	1.09297	392	8	.15	1.08296	429	8	.65	.71889	931	2
0.16	0.75069	+917	-3	0.66	1.09681	+376	-8	1.16	1.07859	-444	-8	1.66	0.70956	-935	-2
.17	.75983	912	3	.67	1.10049	360	8	.17	1.07408	459	8	.67	.70020	938	2
.18	.76893	907	3	.68	1.10402	345	8	.18	1.06942	473	7	.68	.69080	941	2
.19	.77797	902	3	.69	1.10739	329	8	.19	1.06463	486	8	.69	.68138	944	2
.20	.78696	896	3	.70	1.11060	313	8	.20	1.05968	503	8	.70	.67193	946	1
0.21	0.79588	+890	-3	0.71	1.11365	+297	-8	1.21	1.05458	-517	-7	1.71	0.66246	-948	-1
.22	.80475	884	3	.72	1.11654	281	9	.22	1.04934	531	7	.72	.65297	950	1
.23	.81355	877	4	.73	1.11926	264	8	.23	1.04396	545	7	.73	.64346	952	1
.24	.82229	870	4	.74	1.12181	248	8	.24	1.03844	559	7	.74	.63394	953	1
.25	.83095	864	4	.75	1.12421	232	9	.25	1.03279	572	7	.75	.62441	954	-1
0.26	0.83955	+856	-4	0.76	1.12644	+215	-8	1.26	1.02700	-586	-7	1.76	0.61487	-954	0
.27	.84807	849	4	.77	1.12851	198	9	.27	1.02108	599	7	.77	.60533	954	0
.28	.85652	841	4	.78	1.13040	182	8	.28	1.01502	613	7	.78	.59579	954	0
.29	.86489	833	5	.79	1.13214	165	9	.29	1.00883	625	6	.79	.58625	954	0
.30	.87317	824	4	.80	1.13370	148	9	.30	1.00253	638	7	.80	.57671	954	+1
0.31	0.88137	+816	-5	0.81	1.13510	+132	-8	1.31	0.99609	-650	-6	1.81	0.56719	-953	+1
.32	.88948	807	5	.82	1.13633	115	9	.32	.98953	663	7	.82	.55767	952	1
.33	.89751	798	5	.83	1.13739	98	9	.33	.98284	675	6	.83	.54816	950	1
.34	.90543	789	5	.84	1.13828	81	9	.34	.97603	687	6	.84	.53867	948	1
.35	.91326	779	5	.85	1.13901	64	9	.35	.96911	696	6	.85	.52920	946	1
0.36	0.92099	+769	-5	0.86	1.13956	+47	-8	1.36	0.96210	-708	-7	1.86	0.51975	-945	+2
.37	.92863	759	5	.87	1.13995	31	9	.37	.95495	720	6	.87	.51031	941	1
.38	.93616	748	6	.88	1.14017	+14	9	.38	.94770	731	6	.88	.50091	939	2
.39	.94359	738	5	.89	1.14022	-4	9	.39	.94033	742	6	.89	.49154	935	2
.40	.95091	727	6	.90	1.14010	21	9	.40	.93286	753	5	.90	.48220	932	2
0.41	0.95812	+715	-6	0.91	1.13981	-38	-9	1.41	0.92528	-764	-6	1.91	0.47290	-928	+2
.42	.96521	704	6	.92	1.13935	55	9	.42	.91760	774	5	.92	.46364	924	3
.43	.97220	693	6	.93	1.13871	72	9	.43	.90981	783	5	.93	.45443	919	2
.44	.97907	681	6	.94	1.13791	89	9	.44	.90194	793	5	.94	.44525	915	3
.45	.98582	669	6	.95	1.13694	105	8	.45	.89397	802	5	.95	.43613	910	3
0.46	0.99244	+657	-6	0.96	1.13581	-122	-9	1.46	0.88591	-811	-5	1.96	0.42706	-905	+3
.47	.99895	645	7	.97	1.13450	139	9	.47	.87776	820	5	.97	.41805	899	3
.48	1.00533	632	6	.98	1.13303	156	9	.48	.86952	828	4	.98	.40908	894	3
.49	1.01159	620	7	.99	1.13138	173	8	.49	.86120	836	4	.99	.40018	888	4
0.50	1.01772	+607	-7	1.00	1.12958	-189	-9	1.50	0.85280	-844	-4	2.00	0.39133	-881	+3

Applied Constant: +0.60000.

For Eclipses, and as the argument of Table XLVII, the Equation of this Table must be supplemented by those of Tables XXXVIII-XLIV. For the other phenomena the Equations of Tables XLV, XLVI must also be applied.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXXVII continued

Equation of Latitude

Argument Q

Q	Equation	$\Delta$	$\frac{1}{2} \Delta$	Q	Equation	$\Delta$	$\frac{1}{2} \Delta$	Q	Equation	$\Delta$	$\frac{1}{2} \Delta$	Q	Equation	$\Delta$	$\frac{1}{2} \Delta$
<sup>a</sup> 2 00	0 39133	-881	+ 3	2 50	0 08225	-273	+ 8	<sup>a</sup> 3 00	0 15301	+537	+ 7	<sup>a</sup> 3 50	0 55123	+951	+ 1
01	38256	874	4	51	07960	257	8	01	15845	551	7	51	56074	952	+ 1
02	37385	867	4	52	0771	41	8	02	16403	565	7	52	57027	95	0
03	365 3	860	4	53	07479	224	9	03	16974	578	7	53	57980	953	+ 1
04	35668	853	4	54	07263	208	8	04	17559	591	7	54	58934	953	0
05	34819	845	4	55	07064	191	9	05	18157	605	7	55	59888	953	0
2 06	0 33978	-837	+ 4	2 56	0 0688	-174	+ 9	3 06	0 18768	+617	+ 7	3 56	0 60842	+953	0
07	33145	829	4	57	06716	158	8	07	19392	631	7	57	61796	953	0
08	323 0	8 1	5	58	06567	141	9	08	0029	643	7	58	62750	953	- 1
09	31504	812	5	59	06434	124	9	09	20679	656	6	59	63703	952	1
10	30697	803	5	60	06319	108	8	10	21341	668	6	60	64654	951	1
2 11	0 29898	-794	+ 5	2 61	0 06 20	- 91	+ 9	3 11	0 22015	+680	+ 6	3 61	0 65604	+949	- 1
12	9110	784	5	62	06138	74	9	12	2700	692	6	62	66552	947	1
13	8331	774	5	63	0607	57	9	13	3398	703	6	63	67498	945	1
14	27562	764	5	64	060 4	40	9	14	4106	714	6	64	68442	943	2
15	6802	754	6	65	05993	3	9	15	2486	725	6	65	69383	940	2
2 16	0 6054	-743	+ 6	2 66	0 05979	- 6	+ 9	3 16	0 5556	+736	+ 6	3 66	0 70321	+937	- 2
17	25316	733	5	67	05982	+ 1	9	17	26 98	747	5	67	71256	934	2
18	24589	7 2	6	68	0600	29	9	18	27049	757	6	68	72188	930	2
19	2387	711	6	69	06039	45	8	19	781	768	5	69	73116	926	2
20	23168	699	6	70	06092	62	9	20	28584	778	5	70	74041	922	3
2 21	0 22476	-687	+ 6	2 71	0 06163	+ 79	+ 9	3 21	0 29367	+787	+ 5	3 71	0 74960	+918	- 2
22	21794	676	6	72	06 50	96	9	22	30158	796	5	72	75875	913	3
23	11 4	664	6	73	06355	113	9	23	30957	806	5	73	76785	908	3
24	20467	65	7	74	06476	1 9	8	24	31767	815	5	74	77690	902	3
25	19822	639	6	75	06614	145	9	25	32586	823	4	75	78589	897	3
2 26	0 19189	-627	+ 7	2 76	0 06767	+163	+ 9	3 26	0 33413	+832	+ 5	3 76	0 79483	+891	- 3
27	18569	614	7	77	06940	180	8	27	34 49	840	4	77	80370	885	3
28	17962	601	7	78	071 7	196	9	28	35093	848	4	78	81 52	878	4
29	17368	588	7	79	733	12	8	29	35944	856	4	79	82127	871	4
30	16787	574	7	80	0755	229	9	30	36803	862	4	80	82995	864	4
2 31	0 16 0	-560	+ 7	2 81	0 0779	+246	+ 8	3 31	0 37669	+869	+ 4	3 81	0 83855	+857	- 4
32	15667	546	7	82	8044	263	9	32	38542	876	4	82	84708	849	4
33	151 8	53	7	83	08315	279	8	33	39421	883	3	83	85554	842	4
34	146 3	518	7	84	08601	295	8	34	40307	889	4	84	86392	834	5
35	1409	504	7	85	08904	311	8	35	41199	896	3	85	87 21	825	4
2 36	13595	-489	+ 8	2 86	09 23	+327	+ 8	3 36	0 42098	+901	+ 3	3 86	0 8804	+817	- 5
37	13113	475	7	87	09558	343	8	37	430 1	906	3	87	88855	808	5
38	1 644	461	8	88	09908	358	8	38	43910	911	3	88	89658	799	5
39	12191	446	8	89	10274	374	8	39	44823	916	3	89	90452	789	5
40	11753	431	8	90	10656	389	8	40	45741	921	3	90	91 36	778	5
2 41	11330	-416	+ 8	2 91	0 11053	+405	+ 8	3 41	0 46664	+925	+ 2	3 91	0 9 008	+769	- 5
42	109	4 0	8	92	11465	420	8	42	47592	929	2	92	9 772	759	5
43	1053	385	8	93	11893	436	8	43	48523	933	2	93	93527	749	5
44	10153	369	8	94	12336	451	8	44	49457	936	2	94	94 71	739	6
45	09792	353	8	95	1 794	465	7	45	50395	939	2	95	95005	728	6
2 46	0 9447	-338	+ 8	2 96	0 13 66	+479	+ 8	3 46	0 51336	+942	+ 1	3 96	0 95727	+717	- 6
47	09117	3 2	8	97	13753	495	8	47	52 79	945	2	97	96439	705	6
48	08803	306	9	98	14 55	509	7	48	532 5	947	1	98	97139	694	6
49	08506	89	8	99	14771	5 3	7	49	54173	949	1	99	978 8	68	6
2 50	0 08 5	- 73	+ 8	3 00	0 153 1	+537	+ 7	3 50	0 551 3	+951	+ 1	4 00	0 985 4	+670	- 6

Appl dC t t + 600 F El p d th g m t f T bl XLVII th Eq ti f this f bl m t b ppl m t d by th  
f T bl XXXVIII XLIV F th ti ph m th Eq ti f T bl XLV XLVI m t l b ppl d

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXXVIII

Equation of Latitude

Argument U

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
U	Equa- tion	$\Delta$ 0 <sup>d</sup> 0 <sup>r</sup>	$\frac{1}{2} \Delta^2$	U	Equa- tion	$\Delta$ 0 <sup>d</sup> 0 <sup>r</sup>	$\frac{1}{2} \Delta^2$	U	Equa- tion	$\Delta$ 0 <sup>d</sup> 0 <sup>r</sup>	$\frac{1}{2} \Delta^2$	U	Equa- tion	$\Delta$ 0 <sup>d</sup> 0 <sup>r</sup>	$\frac{1}{2} \Delta^2$
d 0 <sup>00</sup>	0 <sup>0</sup> 09000	+ 145	0	d 1 <sup>00</sup>	0 <sup>0</sup> 17009	- 29	- 2	d 2 <sup>00</sup>	0 <sup>0</sup> 5832	- 134	+ 1	d 3 <sup>00</sup>	0 <sup>0</sup> 2244	+ 82	+ 2
02	9289	145	0	02	16947	34	1	02	5567	131	0	02	2411	86	1
04	9578	144	0	04	16874	39	2	04	5307	129	+ 1	04	2586	90	1
06	9866	144	0	06	16792	44	1	06	5052	127	0	06	2769	94	1
08	10153	143	0	08	16700	48	1	08	4801	124	+ 1	08	2960	98	1
10	10438	142	0	10	16599	53	1	10	4556	122	0	10	3159	102	1
012	0 <sup>0</sup> 10722	+ 142	- 1	112	0 <sup>0</sup> 16488	- 58	- 2	212	0 <sup>0</sup> 4316	- 119	+ 1	312	0 <sup>0</sup> 3365	+ 105	+ 1
14	11004	141	0	14	16368	63	1	14	4082	116	1	14	3578	108	1
16	11283	139	- 1	16	16238	67	2	16	3854	112	1	16	3797	112	1
18	11559	138	0	18	16100	72	1	18	3633	109	1	18	4024	115	1
20	11832	136	- 1	20	15952	76	1	20	3418	106	1	20	4256	118	+ 1
022	0 <sup>0</sup> 12101	+ 134	0	122	0 <sup>0</sup> 15796	- 81	- 2	222	0 <sup>0</sup> 3210	- 102	+ 1	322	0 <sup>0</sup> 4494	+ 121	0
24	12367	132	- 1	24	15631	85	1	24	3010	98	1	24	4738	123	+ 1
26	12628	130	0	26	15458	89	1	26	2817	95	1	26	4988	126	+ 1
28	12885	128	- 1	28	15277	93	1	28	2632	91	1	28	5242	129	0
30	13137	125	0	30	15088	97	1	30	2455	87	1	30	5501	131	+ 1
032	0 <sup>0</sup> 13384	+ 122	- 1	132	0 <sup>0</sup> 14891	- 101	- 1	232	0 <sup>0</sup> 2286	- 83	+ 1	332	0 <sup>0</sup> 5765	+ 133	0
34	13625	120	1	34	14687	104	1	34	2125	78	1	34	6032	135	+ 1
36	13861	116	- 1	36	14476	108	1	36	1973	74	1	36	6303	137	1
38	14090	113	0	38	14258	111	- 1	38	1830	69	1	38	6578	139	+ 1
40	14313	110	- 1	40	14033	114	0	40	1696	65	1	40	6856	140	0
042	0 <sup>0</sup> 14529	+ 107	- 1	142	0 <sup>0</sup> 13803	- 117	- 1	242	0 <sup>0</sup> 1571	- 60	+ 1	342	0 <sup>0</sup> 7136	+ 141	+ 1
44	14739	103	1	44	13566	120	1	44	1455	56	1	44	7419	142	0
46	14941	99	1	46	13323	123	1	46	1349	51	2	46	7703	143	+ 1
48	15136	96	1	48	13075	126	1	48	1253	46	1	48	7990	144	0
50	15323	92	1	50	12822	128	0	50	1166	41	2	50	8278	144	0
052	0 <sup>0</sup> 15502	+ 88	- 1	152	0 <sup>0</sup> 12564	- 130	- 1	252	0 <sup>0</sup> 1088	- 36	+ 1	352	0 <sup>0</sup> 8566	+ 144	0
54	15673	84	1	54	12301	132	0	54	1021	32	2	54	8855	145	0
56	15836	80	1	56	12035	134	- 1	56	964	26	1	56	9144	145	0
58	15990	75	1	58	11764	136	0	58	917	21	2	58	9433	145	0
60	16135	71	1	60	11491	138	- 1	60	880	16	1	60	9722	144	0
062	0 <sup>0</sup> 16271	+ 66	- 1	162	0 <sup>0</sup> 11214	- 140	- 1	262	0 <sup>0</sup> 0853	- 11	+ 1	362	0 <sup>0</sup> 10009	+ 143	0
64	16399	62	1	64	10934	141	0	64	836	6	2	64	10295	143	0
66	16516	57	1	66	10652	142	- 1	66	830	- 1	1	66	10580	142	0
68	16625	52	1	68	10368	143	0	68	834	+ 5	2	68	10863	141	- 1
70	16724	47	1	70	10082	144	- 1	70	848	10	1	70	11143	140	0
072	0 <sup>0</sup> 16814	+ 43	- 2	172	0 <sup>0</sup> 09794	- 144	0	272	0 <sup>0</sup> 0872	+ 15	+ 2	372	0 <sup>0</sup> 11421	+ 139	- 1
74	16893	37	1	74	9506	144	0	74	907	20	1	74	11696	137	0
76	16963	33	2	76	9217	145	0	76	951	25	2	76	11967	135	- 1
78	17023	28	2	78	8928	145	0	78	1006	30	1	78	12234	133	0
80	17072	22	1	80	8639	145	0	80	1071	35	1	80	12498	131	- 1
082	0 <sup>0</sup> 17112	+ 18	- 2	182	0 <sup>0</sup> 08350	- 144	0	282	0 <sup>0</sup> 1145	+ 40	+ 2	382	0 <sup>0</sup> 12757	+ 129	- 1
84	17141	12	1	84	8062	144	0	84	1230	45	1	84	13011	126	0
86	17160	7	2	86	7776	143	0	86	1324	50	1	86	13261	124	- 1
88	17169	+ 2	1	88	7491	142	0	88	1428	54	1	88	13505	121	1
90	17168	- 3	2	90	7207	141	+ 1	90	1541	59	2	90	13743	118	1
092	0 <sup>0</sup> 17157	- 9	- 1	192	0 <sup>0</sup> 06927	- 140	0	292	0 <sup>0</sup> 1664	+ 64	+ 1	392	0 <sup>0</sup> 13976	+ 115	- 1
94	17135	14	2	94	6648	139	+ 1	94	1796	68	1	94	14202	112	1
96	17103	19	1	96	6373	137	0	96	1936	73	2	96	14422	108	1
98	17061	24	2	98	6100	135	+ 1	98	2086	77	1	98	14634	105	1
100	0 <sup>0</sup> 17009	- 29	- 1	200	0 <sup>0</sup> 5832	- 134	0	300	0 <sup>0</sup> 2244	+ 82	+ 2	400	0 <sup>0</sup> 14840	+ 101	- 1

Applied Constant: +0<sup>0</sup>09000.

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XXXIX

Equations of Latitude

XL

V	Equation	W	Equation	$\Delta$ od or	W	Equation	$\Delta$ o o	W	Equation	$\Delta$ o or	W	Equation	$\Delta$ od or
00	0 00050	00	0 00600	+7 8	100	0 01029	-1 5	200	0 0431	-7 1	300	0 00 38	+4 5
2	45	04	631	7 8	04	10	2 1	04	403	6 9	04	57	4 9
4	41	08	66	7 6	08	1012	2 6	08	376	6 6	08	277	5 1
6	38	12	69	7 6	12	1001	3 0	12	350	6 4	12	98	5 5
8	36	16	723	7 5	16	988	3 5	16	325	6 0	16	321	6 0
10	37	20	75	7 3	20	973	4 0	20	3	5 6	20	346	6 4
12	0 00038	024	0 00781	+7 1	124	0 00956	-4 6	224	0 00280	-5 3	324	0 00372	+6 5
4	41	28	809	6 8	28	936	5 3	28	60	4 9	28	398	6 8
6	46	32	835	6 4	32	914	5 5	32	241	4 5	32	4 6	7 1
8	5	36	860	6 1	36	892	5 6	36	24	4 0	36	455	7 4
20	55	40	884	5 9	40	869	5 9	40	09	3 4	40	485	7 5
22	0 0 06	044	0 00907	+5 5	144	0 00845	-6 3	244	0 00197	-9	344	0 00515	+7 5
4	63	48	9 8	5 1	48	819	6 8	48	186	2 5	48	545	7 8
6	64	52	948	4 8	52	791	7 0	52	177	2 0	52	577	8 0
8	64	56	966	4 4	56	763	7 1	56	170	1 5	56	609	7 6
30	6	60	983	3 9	60	734	7 4	60	165	0 9	60	638	7 5
32	0 00059	064	0997	+3 3	164	0 00704	-7 5	264	0 00163	-0 3	364	0 00669	+7 8
4	54	68	1009	8	68	674	7 6	68	163	+0 3	68	699	7 5
6	49	72	1019	2 3	72	643	7 6	72	165	0 8	72	729	7 5
8	44	76	10 7	1 8	76	613	7 8	76	169	1 4	76	759	7 3
40	0 00040	80	1033	1 3	80	581	7 9	80	176	1 9	80	787	7 0
		084	0 01037	+0 6	184	0 00550	-7 6	284	0 00184	+2 3	384	0 00815	+6 8
		88	1037	0	88	520	7 5	88	194	2 8	88	841	6 4
		92	1037	-0 5	92	490	7 5	92	206	3 4	92	866	6 1
		96	1034	1 0	96	460	7 4	96	1	4 0	96	890	5 9
		100	0 010 9	-1 5	200	0 00431	-7 1	300	00 38	+4 5	400	0 00913	+5 6

C t t + 000

Appl d C t t | 6

XLI

X	Equatio	$\Delta$	X	Equation	$\Delta$
00	00	+ 18	20	0 00160	- 16
1	219	18	1	144	15
2	36	16	2	130	13
3	252	15	3	117	11
4	67	14	4	108	9
5	280	13	5	101	5
06	0 00290	+ 9	26	0098	- 3
7	97	5	7	97	0
8	30	+ 3	8	100	+ 4
9	303	0	9	106	6
10	301	- 3	30	115	10
11	0 00296	- 7	31	0 00127	+ 12
2	88	9	2	140	15
3	77	13	3	155	17
4	64	14	4	173	18
5	49	15	5	190	18
16	0 00 3	- 16	36	0 00209	+ 18
7	14	18	7	2 7	16
8	195	18	8	244	15
9	178	18	9	60	14
20	00160	- 16	40	0 00 73	+ 11

Appl d C t t + 00

XLII

Y	Equation
00	0 00050
2	41
4	34
6	28
8	25
10	5
12	0 00029
4	35
6	43
8	52
20	61
22	0 00068
4	73
6	75
8	74
30	69
32	0 00063
4	55
6	46
8	37
40	0 0003

C ta t + 0005

XLIII

Z	Equation
00	0 00050
2	55
4	59
6	63
8	64
10	64
12	0 0 062
4	59
6	54
8	49
20	45
22	0 00040
4	38
6	36
8	36
30	38
32	0 00042
4	46
6	51
8	56
40	0 00060

C t t + 000

# SATELLITE II

## Tables of Longitude, Latitude, and Radius Vector

XLIV

Equation of Latitude

Argument Q, U

Q U	0 <sup>d</sup> .0	0 <sup>d</sup> .2	0 <sup>d</sup> .4	0 <sup>d</sup> .6	0 <sup>d</sup> .8	1 <sup>d</sup> .0	1 <sup>d</sup> .2	1 <sup>d</sup> .4	1 <sup>d</sup> .6	1 <sup>d</sup> .8	2 <sup>d</sup> .0	2 <sup>d</sup> .2	2 <sup>d</sup> .4	2 <sup>d</sup> .6	2 <sup>d</sup> .8	3 <sup>d</sup> .0	3 <sup>d</sup> .2	3 <sup>d</sup> .4	3 <sup>d</sup> .6	3 <sup>d</sup> .8	4 <sup>d</sup> .0
0.0	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
.2	44	45	49	53	56	56	53	49	45	44	46	50	54	56	55	52	48	45	44	46	50
.4	38	41	48	56	61	61	55	47	41	38	42	49	57	61	60	54	46	40	38	43	50
.6	34	38	48	58	65	64	57	46	37	34	39	49	59	65	64	56	45	36	35	40	50
.8	32	36	47	59	67	66	58	46	36	32	38	49	61	67	66	57	44	35	32	39	50
1.0	32	37	47	59	67	66	58	46	36	32	38	49	60	67	66	56	44	35	33	39	50
1.2	35	38	48	58	65	64	57	46	38	35	39	49	59	65	64	56	45	37	35	40	50
.4	39	42	48	56	61	60	55	47	41	39	42	49	57	61	60	54	46	40	39	43	50
.6	44	46	49	53	55	55	52	49	46	45	46	50	53	55	55	52	48	45	45	46	50
.8	51	51	50	50	49	49	50	50	51	51	51	50	50	49	49	50	50	49	49	49	50
2.0	57	55	51	46	43	44	47	52	56	57	55	50	46	43	44	47	52	56	57	54	50
2.2	62	59	52	44	38	39	44	53	60	62	59	51	43	38	39	45	54	61	62	58	50
.4	66	62	52	42	35	35	43	54	63	66	61	51	40	34	36	44	55	64	66	60	50
.6	68	64	53	41	33	33	42	54	65	68	63	51	39	33	34	43	56	65	68	61	50
.8	68	63	53	41	33	34	42	54	64	67	62	51	40	33	35	44	56	65	67	61	50
3.0	65	61	52	42	36	36	43	54	62	65	60	51	41	35	37	44	55	63	65	59	50
3.2	61	58	52	44	40	40	45	53	59	60	57	51	44	40	41	46	53	59	60	57	50
.4	55	54	51	48	46	46	48	51	54	54	53	50	47	45	46	48	52	54	55	53	50
.6	48	49	50	51	52	52	51	50	49	48	49	50	51	52	51	50	49	49	48	49	50
.8	42	44	49	54	57	57	53	48	44	42	45	49	55	58	57	53	48	43	42	45	50
4.0	37	40	48	57	62	62	56	47	40	37	41	49	58	63	61	55	46	39	37	42	50

The unit in this Table equals 0.00001.

Applied Constant: -1.0'00050.

XLV

### Occultations and Transits

To correct for the Jovicentric Latitude of the Earth, the Satellite's Latitude as derived from Tables XXXVII-XLIV, must be supplemented by the term—

$$\pm .229003 R_1 \sin (\odot - \Omega) / \Delta \left. \begin{array}{l} + \text{Oc.} \\ - \text{Tr.} \end{array} \right\} (9.359841)$$

where  $R_1$ ,  $\Delta$  are the Geocentric Distances of the Sun and Jupiter respectively, and  $\Omega$  the Ascending Node of Jupiter's Orbit on the Ecliptic, (Table C). For Occultations employ the natural sign, for Transits the reversed sign.

XLVI Sh., Tr.

1	2
Lat.	Corr <sup>n</sup> . Sh., Tr.
0.0	- .00121
.1	104
.2	87
.3	69
.4	52
.5	35
0.6	- .00018
.7	0
.8	+ .00018
.9	35
1.0	52
1.1	+ .00069
.2	87
.3	104
1.4	+ .00121

This Correction to be applied to Latitude as found from Tables XXXVII-XLV, before using as Argument of Semiduration for Shadows and Transits.

120

XLVII

1	2	3	4
Lat.	Angle	Lat.	$\Delta$ 0.01
0.00	- 3°9968 +	1.40	569,1
.05	3°7121	.35	569,5
.10	3°4273	.30	569,9
.15	3°1422	.25	570,2
.20	2°8571	.20	570,5
.25	2°5718	.15	570,7
0.30	- 2°2864 +	1.10	571,0
.35	2°0008	.05	571,2
.40	1°7152	1.00	571,4
.45	1°4294	0.95	571,6
.50	1°1436	.90	571,7
0.55	- 0°8577 +	0.85	571,8
.60	0°5718	.80	571,8
.65	- 0°2859 +	.75	571,8
0.70	0°0000	0.70	571,8

This Table shows the Angle of the Satellite above Jupiter's Orbit, which corresponds to the Latitude as taken from Tables XXXVII-XLIV.

# SATELLITE II

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## Tables

of the

Synodic Motion,

Duration of the Phenomena of Eclipse,  
Occultation, Transit and Shadow-Transit,

with

Equations for Reduction to the Middle

and the

Light-Curve of Eclipse

# SATELLITE II

## Tables of Synodic Motion

### XLVIII

1	2	1	2	1	2	1	2	1	2
Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value
° <b>0'000</b>	d '000000	° <b>0'020</b>	d '000197	° <b>0'040</b>	d '000395	° <b>0'060</b>	d '000592	° <b>0'080</b>	d '000790
<b>1</b>	10	<b>21</b>	207	<b>41</b>	405	<b>61</b>	602	<b>81</b>	800
<b>2</b>	20	<b>22</b>	217	<b>42</b>	415	<b>62</b>	612	<b>82</b>	810
<b>3</b>	30	<b>23</b>	227	<b>43</b>	425	<b>63</b>	622	<b>83</b>	819
<b>4</b>	39	<b>24</b>	237	<b>44</b>	434	<b>64</b>	632	<b>84</b>	829
<b>5</b>	49	<b>25</b>	247	<b>45</b>	444	<b>65</b>	642	<b>85</b>	839
<b>0'006</b>	'000059	<b>0'026</b>	'000257	<b>0'046</b>	'000454	<b>0'066</b>	'000652	<b>0'086</b>	'000849
<b>7</b>	69	<b>27</b>	267	<b>47</b>	464	<b>67</b>	661	<b>87</b>	859
<b>8</b>	79	<b>28</b>	276	<b>48</b>	474	<b>68</b>	671	<b>88</b>	869
<b>9</b>	89	<b>29</b>	286	<b>49</b>	484	<b>69</b>	681	<b>89</b>	879
<b>10</b>	99	<b>30</b>	296	<b>50</b>	494	<b>70</b>	691	<b>90</b>	889
<b>0'011</b>	'000109	<b>0'031</b>	'000306	<b>0'051</b>	'000503	<b>0'071</b>	'000701	<b>0'091</b>	'000898
<b>12</b>	118	<b>32</b>	316	<b>52</b>	513	<b>72</b>	711	<b>92</b>	908
<b>13</b>	128	<b>33</b>	326	<b>53</b>	523	<b>73</b>	721	<b>93</b>	918
<b>14</b>	138	<b>34</b>	336	<b>54</b>	533	<b>74</b>	731	<b>94</b>	928
<b>15</b>	148	<b>35</b>	346	<b>55</b>	543	<b>75</b>	740	<b>95</b>	938
<b>0'016</b>	'000158	<b>0'036</b>	'000355	<b>0'056</b>	'000553	<b>0'076</b>	'000750	<b>0'096</b>	'000948
<b>17</b>	168	<b>37</b>	365	<b>57</b>	563	<b>77</b>	760	<b>97</b>	958
<b>18</b>	178	<b>38</b>	375	<b>58</b>	573	<b>78</b>	770	<b>98</b>	968
<b>19</b>	188	<b>39</b>	385	<b>59</b>	582	<b>79</b>	780	<b>99</b>	977
<b>0'020</b>	'000197	<b>0'040</b>	'000395	<b>0'060</b>	'000592	<b>0'080</b>	'000790	<b>0'100</b>	'000987

### XLIX

1	2
Angle	Syn. Value
° <b>0'0</b>	d '000000
<b>·1</b>	987
<b>·2</b>	1974
<b>·3</b>	2962
<b>·4</b>	3949
<b>·5</b>	4936
<b>0'6</b>	'005923
<b>·7</b>	6911
<b>·8</b>	7898
<b>·9</b>	8885
<b>1'0</b>	'009872

These Tables show the time taken to describe a given angle, with the Mean Synodic Motion. They are to be used for converting into time the Complement or excess of Jupiter's longitude over that of the Satellite at an assumed approximate time of conjunction.

To allow for the *true* Synodic Motion modify the entry of the table by adding to it its product by the Variation as taken from Tables XXXIII-XXXVI.

# SATELLITE II

## Tables of the Phenomena

L

Semiduration

Argument Latitude

Lat	Ecl Oc	3 Δ oo	4 Corr Sh T	5 Lat
000	<sup>d</sup> 04 411	59 0	- 74	1 400
005	4 7 4	58 3	74	395
010	4 994	57 6	75	390
015	43 8	56 8	75	385
020	4356	56	76	380
025	43840	55	76	375
030	044114	54 4	- 77	1 370
035	44384	53 7	77	365
040	44651	53 1	78	360
045	44915	52 4	78	355
050	45175	51 6	79	350
055	04543	51 0	- 79	1 345
060	45685	50 3	80	340
065	45935	49 5	80	335
070	46181	49 0	8	330
075	464 4	48 4	81	325
080	046665	47 7	- 81	1 320
085	4690	47 0	82	315
090	47135	46 4	82	310
095	47366	45 8	8	305
100	47593	45 2	83	300
105	047818	44 7	- 83	1 295
110	48040	44 1	83	290
115	48 59	43 5	84	285
120	48475	43 0	84	280
125	48689	4 5	85	275
130	048900	41 9	- 85	1 270
135	49108	41 4	85	265
140	49314	40 8	86	260
145	495 7	40 2	86	255
150	49716	39 7	86	250
155	049914	39 3	- 87	1 245
160	5 109	38 7	87	240
165	5 3 2	38	88	235
170	50491	37 7	88	230
175	5 679	37 3	88	225
180	05 864	36 7	- 89	1 220
185	51046	36 2	89	215
190	51 6	35 8	89	210
195	51404	35 4	89	205
200	51580	34 8	90	200
205	051753	34 3	- 90	1 195
210	519 3	33 9	90	190
215	5 09	33 5	91	185
220	5 58	33 0	91	180
225	524 2	3 6	91	175
230	05 584	32 1	- 9	1 170
235	5 744	31	9	165
240	52901	31 3	9	160
245	53056	30 9	9	155
250	053 10	30 4	- 93	1 150

L t	Ecl Oc	3 Δ oo	4 Corr SI T	5 Lat
250	<sup>d</sup> 0053210	30 4	- 93	1 150
255	53360	3 0	93	145
260	5351	9 5	93	140
265	53656	9 1	93	135
270	53801	8 7	94	130
275	53944	8 3	94	125
280	0054084	7 9	- 94	1 120
285	54 23	7 6	94	115
290	54360	7	95	110
295	54495	6 8	95	105
300	54628	26 3	95	100
305	054758	25 9	- 95	1 095
310	54887	5 5	96	090
315	55014	25 2	96	085
320	55139	24 8	96	080
325	55 62	24 4	96	075
330	055383	24 0	- 96	1 070
335	5550	23 6	97	065
340	55619	23	97	060
345	55735	22 9	97	055
350	55848	22 6	97	050
355	055960	22 3	- 97	1 045
360	56071	1 8	98	040
365	56179	21 4	98	035
370	56 85	21 1	98	030
375	5639	20 8	98	025
380	056493	20 4	- 98	1 020
385	56594	0 0	98	015
390	56693	19 6	99	010
395	56791	19 3	99	005
400	56886	19 0	99	1 000
405	056981	18 7	- 99	0 995
410	57073	18 3	99	990
415	57164	17 9	100	985
420	5725	17 6	100	980
425	57340	17 3	100	975
430	057425	16 9	- 100	0 970
435	57509	16 6	100	965
440	57591	16 2	100	960
445	57671	15 9	100	955
450	57750	15 6	101	950
455	0578 7	15 3	- 101	0 945
460	57903	14 9	101	940
465	57977	14 6	101	935
470	58049	14 2	101	930
475	58119	13 9	101	925
480	058188	13 6	- 101	0 920
485	58256	13 3	101	915
490	58321	13 0	101	910
495	58385	12 7	102	905
500	058448	12 3	- 102	0 900

Lat	Ecl Oc	3 Δ oor	4 Corr Sh T	5 Lat
500	0 58448	1 3	- 102	900
505	58508	11 9	10	895
510	58567	11 6	10	890
515	586 6	11 4	102	885
520	58681	11 1	102	880
525	58736	10 8	1	875
530	058789	10 4	- 102	870
535	58840	10 0	102	865
540	58889	9 7	102	860
545	58938	9 5	102	855
550	58984	9	103	850
555	059029	8 9	- 103	845
560	59073	8 5	103	840
565	59114	8 1	103	835
570	59154	7 9	103	830
575	59194	7 7	103	825
580	059231	7 4	- 103	820
585	59 67	7 0	103	815
590	59301	6 7	103	810
595	59333	6 4	103	805
600	59365	6 1	103	800
605	059394	5 7	- 103	795
610	59422	5 4	103	790
615	59449	5 1	103	785
620	59473	4 8	104	780
625	59497	4 5	104	775
630	059518	4 3	- 104	770
635	59539	4 0	104	765
640	59558	3 7	104	760
645	59576	3 4	104	755
650	5959	3 0	104	750
655	059606	2 7	- 104	745
660	59619	2 4	104	740
665	59630	2 1	104	735
670	59640	1 8	104	730
675	59648	1 5	104	725
680	059655	1 2	- 104	720
685	59660	0 9	104	715
690	59664	0 6	104	710
695	59666	0 3	104	705
700	059667	0 0	- 104	700

LI Equation of Semiduration

a	Ecl Oc	a	Ecl Oc
<sup>d</sup> 0	<sup>d</sup> +0 00007	<sup>d</sup> 2500	<sup>d</sup> -0 000006
500	+	3000	-
1000	+	3500	+
1500	-	4000	+
2000	-0 000007	4500	+0 000007

Appl dC t t oo oo Th Argum t t t L t t d d l d f m T b l XXXVII XLVI F Sh d w d  
T t th rr t l C l m t b p p l d t th t y l C l Th try m t b rr t d furth by th  
Eq t l f T b l L I L V I F Sh d w d T it it m t l b rr t d f J p l t Ph by T b l L X V I

N C t th b d d d



# SATELLITE II

## Tables of the Phenomena

LII

1	2
$\beta$	E., O., S., T.
d	d
0	0'000010
20	12
40	13
60	14
80	15
100	15
120	0'000015
140	14
160	13
180	12
200	10
220	0'000008
240	7
260	6
280	5
300	5
320	0'000005
340	6
360	7
380	8
400	0'000010

Constant: +0'000000.

Equations of Semiduration

Lat.	'00	'10	'20	'30	'40	'50	'60	'70
$\beta$	1'40	1'30	1'20	1'10	1'00	'90	'80	'70
d								
0	± 14	± 13	± 12	± 11	± 10	± 10	± 10	± 10
20	14	13	12	11	10	10	10	10
40	11	10	9	9	8	8	8	8
60	8	8	7	7	6	6	6	6
80	± 4	± 4	± 3	± 3	± 3	± 3	± 3	± 3
100	0	0	0	0	0	0	0	0
120	∓ 4	∓ 4	∓ 3	∓ 3	∓ 3	∓ 3	∓ 3	∓ 3
140	8	8	7	7	6	6	6	6
160	11	10	9	9	8	8	8	8
180	14	13	12	11	10	10	10	10
200	14	13	12	11	10	10	10	10
220	∓ 13	∓ 11	∓ 10	∓ 10	∓ 9	∓ 9	∓ 9	∓ 9
240	11	10	9	9	8	8	8	8
260	8	8	7	7	6	6	6	6
280	∓ 4	∓ 4	∓ 3	∓ 3	∓ 3	∓ 3	∓ 3	∓ 3
300	0	0	0	0	0	0	0	0
320	± 4	± 4	± 3	± 3	± 3	± 3	± 3	± 3
340	8	8	7	7	6	6	6	6
360	11	10	9	9	8	8	8	8
380	14	13	12	11	10	10	10	10
400	± 14	± 13	± 12	± 11	± 10	± 10	± 10	± 10

No Constant has been added. The unit is 0'000000. The upper sign applies for Occultations, and the lower for Transits.

LIII

Occ., Tr.

LIV

Ecl., Oc.

U	0 <sup>d.0</sup>	0 <sup>d.2</sup>	0 <sup>d.4</sup>	0 <sup>d.6</sup>	0 <sup>d.8</sup>	1 <sup>d.0</sup>	1 <sup>d.2</sup>	1 <sup>d.4</sup>	1 <sup>d.6</sup>	1 <sup>d.8</sup>	2 <sup>d.0</sup>	2 <sup>d.2</sup>	2 <sup>d.4</sup>	2 <sup>d.6</sup>	2 <sup>d.8</sup>	3 <sup>d.0</sup>	3 <sup>d.2</sup>	3 <sup>d.4</sup>	3 <sup>d.6</sup>	3 <sup>d.8</sup>	4 <sup>d.0</sup>
d																					
0'0	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
0'2	63	64	64	65	65	64	64	63	62	61	61	60	60	60	60	61	61	62	63	64	65
0'4	68	69	70	70	70	69	68	66	65	63	62	61	61	62	63	64	66	67	68	69	70
0'6	69	70	70	71	70	69	68	66	64	63	62	62	61	62	63	65	66	68	69	70	71
0'8	66	67	67	68	68	67	67	66	64	63	62	62	61	61	62	63	64	65	66	67	67
1'0	63	64	66	67	67	68	68	67	66	66	64	63	62	61	61	61	62	62	64	65	66
1'2	63	64	66	68	69	70	71	71	70	69	67	66	64	63	61	61	61	62	63	65	67
1'4	63	64	66	67	68	69	70	69	69	67	66	64	63	62	61	61	61	62	63	64	66
1'6	61	62	63	64	64	64	64	64	63	63	62	61	60	59	59	59	60	60	61	62	63
1'8	60	60	60	60	60	60	60	60	60	60	60	60	61	61	61	60	60	60	60	60	60
2'0	61	60	60	59	59	60	61	62	63	64	65	66	66	66	65	64	63	62	61	60	60
2'2	63	62	61	61	62	63	64	66	67	69	70	70	70	70	69	67	66	64	63	62	61
2'4	63	62	61	61	62	63	64	66	67	69	70	70	70	70	69	67	65	64	63	62	61
2'6	64	62	62	61	61	62	62	63	64	65	66	67	67	67	67	66	65	64	63	62	62
2'8	66	65	64	63	62	61	61	62	62	63	64	66	67	68	68	68	68	67	66	65	64
3'0	69	68	66	65	63	62	61	61	62	63	65	67	68	70	71	71	71	70	69	68	66
3'2	67	66	64	63	62	61	60	61	62	63	64	66	67	68	69	69	69	68	67	66	64
3'4	62	61	60	60	59	59	59	60	60	61	62	63	63	63	63	63	63	62	62	61	60
3'6	60	61	61	61	61	61	61	61	60	60	60	59	59	59	59	59	60	60	60	61	61
3'8	64	65	66	66	66	66	65	64	63	62	61	60	60	60	60	61	62	63	65	65	66
4'0	69	70	71	71	71	70	68	67	65	63	62	62	61	62	63	65	66	68	69	70	71

Applied Constant: + 60. The unit in this Table equals 0'000000.

# SATELLITE II

## Tables of the Phenomena

LV		Equation of Semiduration												Sh, Tr								
Q	U	0 <sup>d</sup> 0 0 <sup>d</sup> 2 0 <sup>d</sup> 4			0 <sup>d</sup> 6 0 <sup>d</sup> 8 1 <sup>d</sup> 0			1 <sup>d</sup> 2 1 <sup>d</sup> 4 1 <sup>d</sup> 6			1 <sup>d</sup> 8 2 <sup>d</sup> 0 2 <sup>d</sup> 2			2 <sup>d</sup> 4 2 <sup>d</sup> 6 2 <sup>d</sup> 8			3 <sup>d</sup> 0 3 <sup>d</sup> 2 3 <sup>d</sup> 4			3 <sup>d</sup> 6 3 <sup>d</sup> 8 4 <sup>d</sup> 0		
		0	1		4	7	10	1	14	15	16	15	14	12	9	6	3	1	0	0	1	2
	00	3	4	6	8	11	13	13	15	18	18	17	15	1	10	7	5	4	3	3	5	6
	1	11	1	14	16	19	21	23	4	4	24	23	21	19	16	13	12	10	10	11	13	15
	2	2	3	25	27	30	31	33	33	33	33	31	9	7	5	23	2	21	21	2	4	26
	3	34	35	37	39	41	42	43	43	43	41	4	38	36	35	34	33	33	33	34	36	38
	4	46	47	48	49	51	5	52	51	51	49	48	46	45	44	43	43	44	45	46	47	48
	5																					
	06	54	55	56	57	58	59	59	58	57	56	55	54	52	51	51	52	52	53	54	55	57
	7	61	62	6	63	64	64	64	6	62	61	60	58	57	58	58	58	58	60	61	62	62
	8	64	65	65	66	67	67	67	66	64	63	62	62	61	60	61	61	62	63	64	65	65
	9	64	65	66	67	67	67	67	66	65	64	63	62	61	61	61	62	62	63	64	65	66
	10	63	64	65	66	66	66	65	64	63	62	61	60	60	60	60	60	61	62	63	64	65
	11	60	61	62	62	62	62	62	61	60	59	57	57	56	56	56	56	57	59	60	61	62
	2	54	55	56	57	57	56	56	55	53	52	50	50	49	50	50	51	52	53	54	56	57
	3	47	49	50	50	50	49	47	46	44	43	41	41	41	41	42	43	45	47	48	49	50
	4	39	40	40	40	39	37	36	34	33	31	30	9	30	31	32	34	36	38	39	39	40
	5	30	30	30	29	28	26	24	22	20	19	18	19	19	21	2	25	27	29	30	30	31
	16	2	22	2	21	19	16	14	12	10	9	9	9	10	12	14	17	20	21	22	2	22
	7	17	17	16	14	1	9	6	4		1	2	3	4	7	10	12	15	17	18	17	15
	8	16	15	14	12	9	6	4	2	0	0	1	2	5	8	11	13	15	16	16	15	14
	9	0	18	17	14	11	8	7	5	4	4	6	7	10	13	15	17	19	19	19	18	15
	20	25	24	2	19	17	15	14	13	13	14	15	17	20		24	25	6	26	25	24	22
	21	35	32	31	29	27	25	4	24	24	25	27	29	31	33	35	36	35	35	34	32	31
	2	43	42	40	38	37	36	35	36	36	37	39	40	42	44	45	45	45	44	43	41	39
	3	51	50	48	47	46	45	46	46	47	48	50	51	5	53	53	54	53	52	51	49	48
	4	57	56	54	53	53	53	53	54	55	56	57	58	59	60	60	60	59	58	57	56	54
	5	61	60	59	58	58	58	58	59	60	61	62	63	64	64	65	64	63	62	61	59	59
	26	64	63	62	61	61	61	61	62	63	64	65	66	66	66	67	66	65	64	63	62	62
	7	64	63	6	62	61	61	61	6	63	64	65	66	67	67	67	66	65	64	63	62	61
	8	61	61	60	59	59	59	59	61	61	62	63	65	65	66	65	64	64	63	62	61	60
	9	57	56	55	55	54	55	55	56	58	59	59	61	62	62	62	61	60	58	57	56	55
	30	50	49	48	48	48	48	49	50	52	53	54	55	55	56	55	54	53	51	50	49	48
	31	4	39	38	38	39	40	41	43	44	46	47	48	48	47	46	45	43	41	40	39	38
	2	28	27	6	7	28	30	31	33	36	37	37	38	37	36	35	33	31	29	28	27	27
	3	18	17	17	18	19	21	23	25	27	28	29	29	8	27	25	23	20	18	17	17	16
	4	6	6	6	8	10	13	15	18	19	1	21	21	19	16	13	11	9	7	6	6	7
	5	0	1		4	6	9	12	15	16	16	17	15	13	10	8	5	3	1	0	1	3
	36	0	2	3	6	8	11	14	16	16	16	16	13	11	8	6	3	2	1	1	2	3
	7	6	7	9	11	14	16	19	2	1	21	19	17	15	12	9	8	6	6	6	8	10
	8	15	17	19	21	3	26	7	8	28	8	26	24	2	19	17	16	15	15	16	17	20
	9	8	29	31	33	35	37	38	38	37	36	35	33	31	29	28	27	6	27	28	29	3
	40	40	41	43	45	46	47	47	48	47	45	44	42	40	39	38	38	38	39	40	41	43

Appli d C t t + 6 Th it in thi T bl q al oooo

# SATELLITE II

## Tables of the Phenomena

LVI

Equation of Semiduration

Ec., Oc., Sh., Tr.

Lat. Var.	'00	'02	'04	'06	'08	'10	'12	'14	'16	'18	'20	'22	'24	'26	'28	'30	'32	'34	'36
	1'40	1'38	1'36	1'34	1'32	1'30	1'28	1'26	1'24	1'22	1'20	1'18	1'16	1'14	1'12	1'10	1'08	1'06	1'04
- '020	618	572	531	492	456	422	391	361	334	308	284	261	240	220	201	184	167	152	138
19	619	575	536	499	465	432	403	374	349	324	301	279	260	240	223	206	190	176	163
18	619	578	541	506	473	443	414	387	363	340	319	298	279	261	244	228	214	200	187
17	620	581	546	513	482	453	426	401	378	356	336	316	299	281	266	250	237	224	212
16	620	584	550	520	491	464	439	415	393	373	353	335	318	302	287	273	260	248	237
15	621	587	555	527	500	474	451	428	408	389	370	353	338	322	309	295	283	272	262
- '014	622	589	560	533	508	484	462	442	423	405	388	372	357	343	330	318	306	296	286
13	622	592	565	540	517	494	473	455	438	421	405	390	377	363	352	340	329	320	311
12	623	595	570	547	525	505	486	469	452	437	422	408	396	384	373	362	352	343	335
11	624	598	575	554	534	515	498	482	467	453	439	427	416	404	395	384	375	367	360
10	624	601	580	561	543	526	511	496	482	469	457	446	435	425	416	407	399	392	384
- '009	625	604	585	568	552	536	523	509	497	485	474	464	455	445	438	429	422	416	409
8	625	607	590	575	560	547	534	523	512	501	492	483	474	466	459	452	445	439	433
7	626	610	595	582	569	558	546	536	527	517	509	501	494	486	480	474	468	463	458
6	626	613	600	589	578	568	558	549	541	533	526	519	513	507	501	496	491	487	482
5	627	616	605	596	587	578	570	562	556	549	543	537	533	527	523	518	514	511	507
- '004	628	618	610	602	595	588	582	576	571	565	561	556	552	548	544	540	537	534	531
3	629	621	615	609	604	598	594	589	586	581	578	574	572	568	566	563	560	558	556
2	629	624	620	616	613	609	606	603	601	598	596	593	591	589	587	586	584	582	581
- '001	630	627	625	623	622	619	618	616	616	614	613	611	611	609	609	608	607	606	606
0	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630
+ '001	631	633	635	637	639	640	642	643	645	646	647	648	650	650	652	652	653	654	655
2	631	636	640	644	647	651	654	657	659	662	664	667	669	671	673	674	676	678	679
3	632	639	645	651	656	661	666	670	674	678	681	685	689	691	695	697	699	702	704
4	632	642	650	658	665	672	678	684	689	695	699	704	708	712	716	720	723	726	729
5	633	645	655	665	674	682	690	697	704	711	716	722	728	732	738	742	746	750	754
+ '006	634	647	660	671	682	692	702	711	719	727	734	741	747	753	759	764	769	773	778
7	635	650	665	678	691	702	714	724	734	743	751	759	766	773	780	786	792	797	803
8	635	653	670	685	700	713	726	737	748	759	768	777	786	794	801	808	815	821	827
9	636	656	675	692	709	723	738	750	763	775	785	795	806	814	823	830	838	845	852
10	636	659	680	699	717	734	749	764	778	791	803	814	825	835	844	853	861	868	876
+ '011	637	662	685	706	726	744	761	777	793	806	820	833	845	855	866	875	884	892	901
12	637	665	690	713	735	755	774	791	808	823	838	852	864	876	887	898	908	917	925
13	638	668	695	720	744	765	786	804	823	840	855	870	884	896	909	920	931	941	950
14	638	671	700	727	752	776	798	818	837	855	872	888	903	917	930	942	954	964	974
15	639	674	705	733	761	786	810	832	852	871	889	906	923	937	952	964	977	988	999
+ '016	640	676	710	740	769	796	821	845	867	887	907	925	942	958	973	987	1000	1012	1023
17	641	679	715	747	778	806	833	859	882	903	924	943	962	978	995	1009	1023	1036	1048
18	641	682	719	754	787	817	846	873	897	920	941	962	981	999	1016	1032	1046	1060	1073
19	642	685	724	761	796	827	858	886	912	936	958	980	1001	1019	1038	1054	1069	1084	1098
+ '020	642	688	729	768	804	838	869	899	926	952	976	999	1020	1040	1059	1076	1093	1108	1122

Applied Constant : +0<sup>d</sup>.000630. The unit in this Table is equal to 0<sup>d</sup>.000001. The Arguments of this Table are the Variation, as taken from Tables XXXIII-XXXVI, and the Latitude, from Tables XXXVII-XLVI.

# SATELLITE II

## Tables of the Phenomena

LVI *continued*

Equation of Semiduration

Ec, Oc, Sh, Tr

L t Var	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70
	1 04	1 02	1 00	98	96	94	92	90	88	86	84	82	80	78	76	74	72	
- 020	138	125	11	101	90	81	7	64	57	51	45	40	36	33	31	28	7	27
19	163	150	138	127	117	108	100	92	86	80	74	70	66	63	61	58	57	57
18	187	175	164	153	144	135	118	120	114	118	103	99	95	92	90	88	87	87
17	1	200	190	180	171	163	156	148	143	137	132	119	115	112	110	118	117	117
16	37	6	16	207	199	191	184	177	17	167	16	159	155	153	151	149	148	148
15	6	51	242	33	26	18	21	205	201	196	191	188	185	183	181	179	178	178
- 014	86	76	68	259	5	246	240	234	9	224	21	217	214	212	211	209	208	8
13	311	31	294	85	79	73	268	6	58	53	50	46	244	42	41	239	238	38
12	335	37	319	31	36	30	295	90	286	282	279	76	273	272	270	269	268	268
11	36	35	345	338	333	328	33	318	315	311	308	36	303	302	300	299	298	298
10	384	378	371	366	361	356	35	347	344	341	338	336	334	332	331	330	39	329
- 009	409	403	397	392	388	383	380	375	373	370	367	365	364	362	361	360	359	359
8	433	48	43	418	414	410	407	404	401	398	396	394	393	391	390	389	389	389
7	458	453	459	444	441	437	435	43	430	427	425	423	423	421	40	419	419	419
6	482	478	475	471	468	465	463	460	458	456	454	453	452	451	450	449	449	449
5	507	503	501	497	495	49	491	488	487	485	483	482	482	481	480	479	479	479
- 004	531	59	526	54	522	52	518	516	515	514	513	512	511	510	510	509	509	59
3	556	554	55	550	549	547	546	545	544	543	54	541	541	540	54	539	539	539
2	581	580	578	577	576	575	574	574	573	572	572	571	571	571	570	570	570	570
- 001	66	605	64	603	603	60	6	602	60	601	601	60	601	601	600	600	600	600
0	630	630	63	630	630	63	630	630	630	630	630	630	630	630	630	630	630	630
+ 001	655	655	656	650	657	657	658	658	658	659	659	660	660	660	660	660	66	660
2	679	680	68	683	684	685	686	686	687	688	688	689	689	689	690	690	690	690
3	704	705	78	709	711	71	714	715	716	717	717	718	719	719	720	70	720	720
4	79	731	734	736	738	740	742	744	745	746	747	748	749	750	750	751	751	751
5	754	756	76	76	765	767	770	772	774	775	776	777	779	78	780	781	781	781
+ 006	778	782	785	789	79	795	797	800	802	804	806	807	808	89	810	811	811	811
7	803	807	811	815	819	82	85	828	831	833	835	836	838	839	840	841	841	841
8	87	83	837	84	846	850	853	856	859	862	864	866	867	869	870	871	871	871
9	85	857	863	868	873	877	881	884	888	891	893	895	897	899	90	901	901	901
10	876	882	889	894	899	904	908	913	916	919	92	924	926	928	99	930	931	931
+ 011	91	907	915	91	926	93	936	941	945	948	951	954	956	958	959	960	961	961
12	925	933	941	948	954	960	965	970	974	978	981	984	987	988	990	991	99	99
13	95	958	967	974	981	987	993	998	103	1007	1010	1013	1017	1018	1020	1021	1022	1022
14	974	984	992	101	108	1014	1020	1026	1031	1036	1039	1043	1046	1048	1049	1051	1052	1052
15	999	109	1018	1027	1035	1041	1048	1054	1060	1065	1068	107	1076	1078	179	1081	1082	1082
+ 016	1023	1034	1044	1053	1061	1069	1076	1083	1088	1093	1098	1101	1105	1107	1109	1111	1112	1112
17	1048	1059	170	1180	1088	1096	1114	1111	1117	112	1127	1131	1135	1137	1139	1141	114	1142
18	1073	1085	1096	1107	1116	1115	1132	1140	1146	1152	1157	1161	1165	1168	1170	1172	1173	1173
19	1098	1110	112	1133	1143	1152	1160	1168	1175	1181	1186	1190	1195	1198	1	102	103	123
+ 020	112	1135	1148	1159	1170	1179	1188	1196	103	1209	115	120	1224	1227	129	123	1233	1233

Appl d C t t + 0006 Th it th T bl q l to 0000 Th A g m ts f thl T bl th Vari ti tak fr m T bl XXXIII XXXVI  
d th Latit d fr m T bl XXXVII XLVI

# SATELLITE II

## Tables of the Phenomena

LVII

Reductions to Middle

Argument Q

1	2	3	4	5
Ecl., Oc.	$\Delta_{0^h 0^m}$	Q	Sh., Tr.	$\Delta_{0^h 0^m}$
d - 0'000435	- 29	0'00	d - 0'000487	- 37
492	28	0'02	561	37
549	29	0'04	636	37
606	28	0'06	710	37
661	27	0'08	782	36
715	27	0'10	853	35
- 0'000769	- 26	0'12	- 0'000922	- 34
820	25	0'14	989	33
869	24	0'16	1054	32
916	23	0'18	1116	30
961	22	0'20	1174	28
- 0'001004	- 21	0'22	- 0'001229	- 27
1044	19	0'24	1281	25
1080	17	0'26	1328	23
1112	16	0'28	1371	21
1142	14	0'30	1410	18
- 0'001168	- 12	0'32	- 0'001444	- 16
1191	11	0'34	1473	14
1210	9	0'36	1498	11
1225	6	0'38	1517	8
1235	4	0'40	1531	6
- 0'001242	- 2	0'42	- 0'001540	- 3
1245	- 1	0'44	1544	- 1
1244	+ 2	0'46	1542	+ 2
1238	4	0'48	1535	5
1229	6	0'50	1523	7
- 0'001216	+ 8	0'52	- 0'001506	+ 10
1199	10	0'54	1483	13
1177	12	0'56	1455	15
1152	13	0'58	1423	17
1124	15	0'60	1386	20
- 0'001092	+ 16	0'62	- 0'001345	+ 22
1057	18	0'64	1299	24
1019	20	0'66	1250	26
978	21	0'68	1196	28
934	23	0'70	1138	30
- 0'000888	+ 24	0'72	- 0'001078	+ 31
840	25	0'74	1015	32
789	26	0'76	949	34
736	27	0'78	881	35
682	27	0'80	810	36
- 0'000627	+ 28	0'82	- 0'000738	+ 36
571	28	0'84	665	37
515	28	0'86	591	37
458	29	0'88	517	37
400	29	0'90	442	38
- 0'000343	+ 28	0'92	- 0'000367	+ 37
286	28	0'94	293	37
231	28	0'96	220	36
175	27	0'98	148	35
- 0'000122	+ 26	1'00	- 0'000078	+ 35

1	2	3	4	5
Ecl., Oc.	$\Delta_{0^h 0^m}$	Q	Sh., Tr.	$\Delta_{0^h 0^m}$
d - 0'000122	+ 26	1'00	d - 0'000078	+ 35
70	26	0'02	- 10	33
- 19	25	0'04	+ 55	32
+ 29	24	0'06	118	31
74	22	0'08	177	29
117	21	0'10	234	28
+ 0'000158	+ 20	1'12	+ 0'000287	+ 26
196	18	0'14	336	24
230	16	0'16	381	21
261	15	0'18	421	19
288	13	0'20	457	17
+ 0'000312	+ 11	1'22	+ 0'000488	+ 14
333	9	0'24	514	12
349	7	0'26	535	10
362	5	0'28	552	7
369	3	0'30	563	4
+ 0'000373	+ 1	1'32	+ 0'000569	+ 2
374	- 1	0'34	569	- 1
370	3	0'36	564	4
363	5	0'38	554	6
352	7	0'40	539	9
+ 0'000336	- 9	1'42	+ 0'000519	- 12
316	11	0'44	493	14
292	13	0'46	462	17
265	14	0'48	427	19
235	16	0'50	387	21
+ 0'000202	- 18	1'52	+ 0'000343	- 21
165	19	0'54	296	24
125	21	0'56	243	27
82	22	0'58	187	29
+ 36	24	0'60	128	30
- 0'000012	- 25	1'62	+ 0'000066	- 34
62	25	0'64	+ 1	31
113	26	0'66	- 67	35
166	27	0'68	137	36
220	28	0'70	208	36
- 0'000277	- 28	1'72	- 0'000281	- 37
334	29	0'74	355	37
391	28	0'76	429	37
448	28	0'78	504	37
504	28	0'80	578	37
- 0'000561	- 29	1'82	- 0'000653	- 37
618	28	0'84	726	36
674	27	0'86	798	35
727	27	0'88	869	35
780	26	0'90	937	34
- 0'000831	- 25	1'92	- 0'001004	- 31
880	24	0'94	1067	31
927	23	0'96	1129	30
971	21	0'98	1187	28
- 0'001012	- 20	2'00	- 0'001241	- 26

Applied Constant:  $-0^s.00046r.$

This Table includes a constant portion of the Equation of Light.

The Entry must be

supplemented by Equations from Tables LVIII-LXV.

The whole must be corrected by adding to it its product by the Variation, as drawn from

Tables XXXIII-XXXVI.

For Shadows and Transits it must also be corrected for Jupiter's Phase by Table LXVI.

# SATELLITE II

## Tables of the Phenomena

LVII *continued*

Reductions to Middle

Argument Q

Hel Oc	$\Delta$ o or	3 Q	4 Sh T	5 $\Delta$ o or
d - 0 0 1	- 20	2 00	d - 0 001241	- 6
105	18	02	1292	24
1087	17	04	1338	2
1119	15	06	1380	0
1148	13	08	1418	18
1173	1	10	1451	15
- 0 001196	- 10	2 12	- 0 001479	- 13
1 14	8	14	1503	11
1 8	6	16	1521	8
1237	4	18	1534	5
1243	- 2	20	1541	- 3
- 0 01 45	0	2 22	- 0 001544	
1243	+	24	1541	+
1 36	4	26	1533	5
1 26	6	28	1520	8
1 12	8	30	1502	11
- 0 001195	+ 10	2 32	- 0 001477	+ 13
1172	1	34	1448	15
1146	14	36	1416	18
1117	15	38	1377	20
1085	17	40	1335	2
- 0 001049	+ 19	2 42	- 0 001288	+ 24
1010	20	44	1 39	6
969	1	46	1184	28
9 4	23	48	1126	30
877	24	50	1064	32
- 0 000829	+ 25	2 52	- 0 001001	+ 33
778	26	54	934	34
7 4	7	56	866	35
670	7	58	794	36
615	28	60	722	36
- 0 000559	+ 28	2 62	- 0 000649	+ 37
503	28	64	575	37
445	9	66	501	38
387	9	68	4 5	38
331	28	70	351	37
- 0 000274	+ 8	2 72	- 0 000277	+ 37
19	8	74	204	36
163	27	76	133	35
111	26	78	63	34
59	6	80	+	5
0 000008	+ 25	2 82	+ 0 000069	+ 32
+	40	84	132	30
84	2	86	190	29
1 6	21	88	46	27
167	19	90	298	25
+ 0 000204	+ 17	2 92	+ 0 000347	+ 3
37	16	94	390	1
68	14	96	4 9	19
94	1	98	464	16
+ 0 000317	+ 11	3 00	+ 0 000494	+ 14

Fel Oc	$\Delta$ o or	3 Q	4 Sh T	5 $\Delta$ o or
d + 0 000317	+ 11	3 00	+ 0 000494	+ 14
337	9	02	519	11
35	7	04	539	9
364	5	06	555	7
370	2	08	565	4
373	+	10	570	+
+ 0 000374	- 1	3 12	+ 0 000569	- 2
369	3	14	56	5
361	5	16	551	7
349	7	18	535	9
33	10	20	514	12
+ 0 000311	- 12	3 22	+ 0 000487	- 14
286	13	24	455	17
259	15	26	419	19
228	16	28	378	21
194	18	30	333	23
+ 0 000157	- 20	3 32	+ 0 000285	- 25
116	21	34	31	28
72	23	36	174	29
+	25	38	115	31
-	23	40	+	52
- 0 000073	- 25	3 42	- 0 000014	- 34
1 4	26	44	82	35
178	27	46	152	36
232	8	48	224	36
89	28	50	297	37
- 0 000347	- 29	3 52	- 0 000371	- 37
403	8	54	445	37
460	28	56	520	37
516	28	58	594	37
574	9	60	669	37
- 0 000630	- 28	3 62	- 0 000742	- 36
686	27	64	813	36
739	26	66	884	35
791	26	68	952	34
84	25	70	1019	32
- 0 000891	- 24	3 72	- 0 001081	- 31
937	2	74	1142	30
980	1	76	1199	28
102	20	78	1 52	26
1061	18	80	1303	24
- 0 001095	- 16	3 82	- 0 001348	- 22
11 6	15	84	1390	20
1154	13	86	1426	17
1179	1	88	1458	15
1201	10	90	1485	13
- 0 001218	- 7	3 92	- 0 001508	- 10
1230	5	94	1524	7
1239	3	96	1536	5
1244	- 2	98	1543	- 2
- 0 001 46	0	4 00	- 0 001545	0

Appli dC t t 000 6

ppl m t d by Eq ti  
T bl XXIII XXXVI

Thi T bl i l d

LVIII LXV

F Sh l w d T

t

Th

h l m t b

9

t t p rti fth Eq ti fLight

Th h l m t b

t d by ddi g to itit p d t byth Vari ti as dr w fr m

t d f J pit Ph by T bl LXVI

Th E t y must b

7

# SATELLITE II

## Tables of the Phenomena

LVIII

Reductions to Middle

Argument R

1	2	3	4	5
Ecl. Oc.	$\Delta_{0^d.0I}$	R	Sh., Tr.	$\Delta_{0^d.0I}$
d 0'000320	- 10	0'00	d 0'000320	- 11
301	9	0'02	298	11
282	9	0'04	277	10
264	9	0'06	256	10
246	9	0'08	236	10
229	9	0'10	216	10
0'000212	- 8	0'12	0'000197	- 10
195	8	0'14	177	9
179	8	0'16	159	9
163	8	0'18	141	9
148	7	0'20	124	8
0'000134	- 7	0'22	0'000108	- 8
122	6	0'24	94	7
110	6	0'26	81	6
100	5	0'28	69	6
90	5	0'30	57	6
0'000081	- 4	0'32	0'000047	- 5
74	3	0'34	39	4
68	3	0'36	32	3
63	2	0'38	27	3
59	2	0'40	22	2
0'000057	- 1	0'42	0'000020	- 1
56	0	0'44	19	0
57	+ 1	0'46	19	+ 1
58	1	0'48	21	1
61	2	0'50	24	2
0'000065	+ 3	0'52	0'000029	+ 3
71	3	0'54	36	4
78	4	0'56	44	4
86	5	0'58	53	5
96	5	0'60	64	6
0'000106	+ 6	0'62	0'000076	+ 6
118	6	0'64	89	7
130	6	0'66	103	7
143	7	0'68	118	8
157	7	0'70	134	9
0'000173	+ 8	0'72	0'000152	+ 9
189	8	0'74	170	9
205	8	0'76	189	10
222	9	0'78	209	10
240	9	0'80	229	10
0'000258	+ 9	0'82	0'000249	+ 10
276	9	0'84	270	10
294	9	0'86	290	11
313	10	0'88	312	11
332	9	0'90	333	10
0'000350	+ 9	0'92	0'000354	+ 11
368	9	0'94	375	10
387	9	0'96	396	10
405	9	0'98	417	10
0'000422	+ 8	1'00	0'000437	+ 9

1	2	3	4	5
Ecl. Oc.	$\Delta_{0^d.0I}$	R	Sh., Tr.	$\Delta_{0^d.0I}$
d 0'000422	+ 8	1'00	d 0'000437	+ 9
438	8	0'02	455	9
455	8	0'04	474	9
471	8	0'06	492	9
486	7	0'08	510	9
500	7	0'10	526	8
0'000513	+ 6	1'12	0'000540	+ 7
525	6	0'14	554	7
536	6	0'16	567	6
547	5	0'18	579	6
556	4	0'20	590	5
0'000563	+ 4	1'22	0'000598	+ 4
570	3	0'24	606	3
575	2	0'26	611	3
579	2	0'28	616	2
582	1	0'30	619	1
0'000584	+ 1	1'32	0'000621	+ 1
584	0	0'34	621	0
583	- 1	0'36	620	- 1
580	2	0'38	617	2
576	2	0'40	612	3
0'000571	- 3	1'42	0'000607	- 3
565	4	0'44	600	4
557	4	0'46	591	5
548	5	0'48	580	6
538	5	0'50	569	6
0'000527	- 6	1'52	0'000556	- 7
515	6	0'54	542	7
502	7	0'56	528	7
488	7	0'58	512	8
473	8	0'60	495	9
0'000457	- 8	1'62	0'000477	- 9
441	8	0'64	458	10
425	9	0'66	439	10
407	9	0'68	419	10
389	9	0'70	399	10
0'000371	- 9	1'72	0'000378	- 10
353	9	0'74	358	11
334	9	0'76	336	11
316	9	0'78	315	10
297	9	0'80	294	11
0'000279	- 9	1'82	0'000273	- 11
260	9	0'84	251	10
242	9	0'86	231	10
224	9	0'88	210	10
207	8	0'90	191	9
0'000191	- 8	1'92	0'000173	- 9
175	8	0'94	154	9
160	7	0'96	137	8
145	7	0'98	120	8
0'000131	- 7	2'00	0'000104	- 8

Applied Constant: +0'000320.

# SATELLITE II

## Tables of the Phenomena

Reductions to Middle

LIX

A	Ec Sh	Oc Tr	3 o
d			
00	0 000061		+ 10
2	8		1
4	101		9
6	114		5
8	1 1		+ 2
10	1		-
12	0 00 113		- 6
4	97		9
6	78		10
8	57		11
20	36		1
22	0 000018		- 8
4	6		5
6	0		- 1
8			+ 3
30	1		7
32	0 000027		+ 9
4	47		1
6	69		11
8	89		10
40	106		8
42	0 000117		+ 4
4	1 1		+ 1
6	118		- 4
8	108		7
50	91		1
52	0 000071		- 11
4	49		11
6	29		9
8	12		7
60	3		- 3
62	0 000000		0
4	4		+ 4
6	17		8
8	34		10
70	54		11
72	000076		+ 10
4	96		9
6	112		7
8	12		+ 3
80	0 000122		- 1

0 t t + 00006

LX

Lc	Oc	P	3 Sh Tr
0 000029	1850	0 0 0011	
	52		18
14	54		26
7	56		33
	58		38
0	60		40
000002	1862	0 000040	
5	64		35
12	66		28
2	68		20
7	70		13
0 000033	1872	0 0 0007	
37	74		3
38	76		
35	78		5
30	80		10
0 0000	1882	0 000018	
15	84		5
8	86		32
3	88		37
1	90		39
0 000002	1892	0 000038	
6	94		34
13	96		27
0	98		20
0 0000 8	1900	0 00001	

Ec	Oc	P	3 Sh Tr
d			
0 0000 8	1900	0 000012	
			6
34	02		
38	04		
39	06		1
37	08		3
31	10		9
0 000024	1912	0 000016	
16	14		24
10	16		3
4	18		36
	20		38
000003	1922	0 000037	
7	24		33
13	26		27
21	28		19
9	30		11
0 000035	1932	0 000005	
39	34		1
40	36		0
37	38		3
32	40		8
0 000025	1942	0 000015	
17	44		23
1	46		30
5	48		35
0 000002	1950	0 000038	

Appli dO t t + 00

LXI

Lc	Oc	S	3 Sh Tr
0 000 20	00	0 000020	
15	1		14
11	2		1
8	3		6
6	4		4
6	5		4
00008	06	0 000006	
11	7		10
16	8		15
21	9		0
5	10		26
0 000029	11	0 000031	
32	2		35
34	3		36
34	4		36
32	5		34
0 000028	16	0 000030	
24	7		24
19	8		19
14	9		13
0 000010	20	0 000009	

0 t t + 0000

LXII

T	Ec Sh	Oc Tr
d		
00	0 000010	
2		8
4		6
6		7
8		9
10		11
12	0 000 13	
4		14
6		1
8		10
20	0 000007	

0 ta t + 0000

LXIII

U	Ec Sh	Oc Tr	U	Ec Sh	Oc Tr
d					
00	0 000030		20	0 000015	
1		23	1		10
2		16	2		9
3		11	3		10
4		9	4		13
5		9	5		18
06	0 000012		26	0 000025	
7		17	7		3
8		23	8		40
9		31	9		46
10		38	30		50
11	0 000045		31	0 000051	
2		49	2		50
3		51	3		47
4		51	4		41
5		48	5		34
16	0 000042		36	0 000027	
7		36	7		19
8		28	8		14
9		21	9		10
20	0 000015		40	0 000009	

Const t + 00003



# SATELLITE II

## Tables of the Phenomena

LXIV

Reduction to Middle

Occultations

Q γ	0 <sup>d.0</sup>	0 <sup>d.2</sup>	0 <sup>d.4</sup>	0 <sup>d.6</sup>	0 <sup>d.8</sup>	1 <sup>d.0</sup>	1 <sup>d.2</sup>	1 <sup>d.4</sup>	1 <sup>d.6</sup>	1 <sup>d.8</sup>	2 <sup>d.0</sup>	2 <sup>d.2</sup>	2 <sup>d.4</sup>	2 <sup>d.6</sup>	2 <sup>d.8</sup>	3 <sup>d.0</sup>	3 <sup>d.2</sup>	3 <sup>d.4</sup>	3 <sup>d.6</sup>	3 <sup>d.8</sup>	4 <sup>d.0</sup>			
a																								
0	+	6	+	6	+	4	+	3	+	1	-	1	-	3	-	5	-	6	-	6	+	5	+	4
10	+	29	+	27	+	22	+	14	+	5	-	6	-	15	-	23	-	27	-	29	+	26	+	20
20	+	50	+	47	+	38	+	25	+	8	-	10	-	26	-	40	-	48	-	50	+	45	+	35
30	+	71	+	66	+	54	+	35	+	11	-	14	-	37	-	56	-	67	-	71	+	64	+	49
40	+	89	+	84	+	67	+	43	+	14	-	17	-	47	-	70	-	85	-	89	+	80	+	62
50	+	105	+	98	+	79	+	51	+	17	-	20	-	55	-	82	-	100	-	105	+	94	+	73
60	+	117	+	110	+	89	+	57	+	18	-	23	-	62	-	92	-	112	-	117	+	106	+	82
70	+	126	+	119	+	96	+	62	+	20	-	25	-	66	-	100	-	120	-	126	+	114	+	88
80	+	132	+	124	+	100	+	64	+	21	-	26	-	69	-	104	-	126	-	132	+	118	+	92
90	+	133	+	125	+	101	+	65	+	21	-	26	-	70	-	105	-	127	-	133	+	120	+	93
100	+	130	+	123	+	99	+	64	+	21	-	26	-	69	-	103	-	125	-	130	+	118	+	91
110	+	124	+	117	+	94	+	61	+	20	-	24	-	65	-	98	-	119	-	124	+	112	+	87
120	+	114	+	107	+	87	+	56	+	18	-	22	-	60	-	90	-	109	-	114	+	103	+	80
130	+	101	+	95	+	77	+	49	+	16	-	20	-	53	-	80	-	96	-	101	+	91	+	71
140	+	85	+	80	+	64	+	41	+	13	-	17	-	45	-	67	-	81	-	85	+	76	+	59
150	+	66	+	62	+	50	+	32	+	10	-	13	-	35	-	52	-	63	-	66	+	60	+	46
160	+	45	+	42	+	34	+	22	+	7	-	9	-	24	-	36	-	43	-	45	+	41	+	32
170	+	23	+	22	+	17	+	11	+	4	-	4	-	12	-	18	-	22	-	23	+	21	+	16
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
190	-	23	-	21	-	17	-	11	-	4	+	4	+	12	+	18	+	22	+	23	+	21	+	16
200	-	44	-	42	-	34	-	22	-	7	+	9	+	23	+	35	+	42	+	44	+	41	+	32
210	-	65	-	62	-	50	-	32	-	10	+	13	+	34	+	52	+	62	+	65	+	61	+	48
220	-	84	-	79	-	64	-	41	-	13	+	16	+	44	+	66	+	80	+	84	+	78	+	61
230	-	101	-	95	-	76	-	49	-	16	+	20	+	53	+	79	+	96	+	101	+	93	+	73
240	-	114	-	107	-	86	-	56	-	18	+	22	+	60	+	90	+	109	+	114	+	105	+	83
250	-	124	-	117	-	94	-	61	-	20	+	24	+	65	+	98	+	118	+	124	+	115	+	91
260	-	130	-	123	-	99	-	64	-	21	+	26	+	69	+	103	+	125	+	130	+	121	+	95
270	-	133	-	125	-	101	-	65	-	21	+	26	+	70	+	105	+	127	+	133	+	123	+	97
280	-	132	-	124	-	100	-	64	-	21	+	26	+	69	+	104	+	126	+	132	+	122	+	96
290	-	126	-	119	-	96	-	62	-	20	+	25	+	66	+	100	+	121	+	126	+	117	+	92
300	-	117	-	110	-	89	-	57	-	19	+	23	+	62	+	93	+	112	+	117	+	108	+	85
310	-	105	-	99	-	80	-	51	-	17	+	20	+	55	+	83	+	100	+	105	+	97	+	76
320	-	89	-	84	-	68	-	44	-	14	+	17	+	47	+	70	+	85	+	89	+	82	+	65
330	-	71	-	67	-	54	-	35	-	11	+	14	+	37	+	56	+	68	+	71	+	66	+	52
340	-	51	-	48	-	38	-	25	-	8	+	10	+	27	+	40	+	48	+	51	+	47	+	37
350	-	29	-	27	-	22	-	14	-	5	+	6	+	15	+	23	+	27	+	29	+	27	+	21
360	-	6	-	6	-	5	-	3	-	1	+	1	+	3	+	5	+	6	+	6	+	6	+	5
370	+	17	+	16	+	13	+	8	+	3	-	3	-	9	-	13	-	16	-	17	-	15	-	12
380	+	39	+	37	+	29	+	19	+	6	-	8	-	20	-	31	-	37	-	39	-	36	-	28
390	+	60	+	57	+	46	+	29	+	9	-	12	-	32	-	47	-	57	-	60	-	56	-	44
400	+	80	+	75	+	60	+	39	+	13	-	16	-	42	-	63	-	76	-	80	-	74	-	58

The unit in this Table equals 0<sup>d.0000000</sup>.

No Constant has been added.

# SATELLITE II

## Tables of the Phenomena

LXV

Reduction to Middle

Transits

Q γ	0 <sup>d</sup> 0	0 <sup>d</sup> 2	0 <sup>d</sup> 4	0 <sup>d</sup> 6 0 <sup>h</sup> 8 1 <sup>d</sup> 0	1 <sup>d</sup> 2 1 <sup>h</sup> 4 1 <sup>d</sup> 6	1 <sup>d</sup> 8 2 <sup>d</sup> 0 2 <sup>d</sup> 2	2 <sup>d</sup> 4 2 <sup>d</sup> 6 2 <sup>d</sup> 8	3 <sup>d</sup> 0 3 <sup>d</sup> 2 3 <sup>d</sup> 4	3 <sup>d</sup> 6 3 <sup>d</sup> 8 4 <sup>d</sup> 0
0	- 6 - 5 - 4	- 3 - 1 + 1	+ 3 + 4 + 5	+ 6 + 5 + 4	+ 1 - 2	- 3 - 4 - 5	- 6 - 5 - 4		
10	- 35 - 33 - 6	- 17 - 6 + 7	+ 19 + 27 + 34	+ 35 + 32 + 25	+ 16 + 4 - 9	20 - 28 - 34	- 35 - 32 - 25		
20	- 64 - 60 - 48	- 31 - 10 + 13	+ 34 + 50 + 61	+ 64 + 58 + 47	+ 8 + 7 - 16	- 36 - 51 - 6	- 63 - 57 - 44		
30	- 90 - 85 - 68	- 44 - 14 + 18	+ 48 + 71 + 86	+ 90 + 82 + 65	+ 40 + 10 - 22	- 51 - 74 - 87	- 90 - 81 - 64		
40	- 114 - 108 - 87	- 57 - 18 + 23	+ 61 + 91 + 109	+ 114 + 105 + 84	+ 52 + 13 - 8	- 65 - 92 - 110	- 114 - 103 - 80		
50	- 137 - 128 - 104	- 67 - 1 + 27	+ 7 + 108 + 130	+ 137 + 116 + 100	+ 61 + 15 - 33	- 77 - 111 - 13	- 136 - 123 - 96		
60	- 153 - 143 - 116	- 75 - 24 + 3	+ 81 + 111 + 146	+ 153 + 141 + 112	+ 69 + 17 - 37	- 86 - 124 - 148	- 15 - 138 - 107		
70	- 165 - 155 - 125	- 81 - 26 + 3	+ 87 + 130 + 157	+ 165 + 15 + 120	+ 74 + 18 - 40	- 93 - 134 - 159	- 164 - 149 - 116		
80	- 17 - 161 - 131	84 - 27 + 34	+ 91 + 135 + 164	+ 172 + 158 + 116	+ 77 + 19 - 4	- 97 - 139 - 166	- 171 - 155 - 121		
90	- 174 - 163 - 13	- 85 - 7 + 34	+ 9 + 137 + 166	+ 174 + 160 + 127	+ 78 + 19 - 4	- 98 - 141 - 168	- 173 - 157 - 12		
100	- 171 - 160 - 19	- 83 - 26 + 33	+ 90 + 134 + 163	+ 171 + 157 + 125	+ 77 + 19 - 41	- 96 - 138 - 165	- 170 - 154 - 120		
110	- 163 - 152 - 123	- 79 - 5 + 32	+ 86 + 128 + 155	+ 163 + 149 + 119	+ 73 + 18 - 39	- 9 - 132 - 157	- 16 - 147 - 114		
120	- 149 - 140 - 113	- 73 - 3 + 29	+ 79 + 118 + 143	+ 149 + 137 + 109	+ 67 + 16 - 36	- 84 - 121 - 144	- 149 - 135 - 105		
130	- 132 - 124 - 100	65 - 20 + 6	+ 70 + 104 + 126	+ 132 + 111 + 96	+ 59 + 14 - 32	74 - 107 - 128	- 131 - 119 - 93		
140	113 - 106 - 85	- 54 - 17 + 2	+ 59 + 88 + 108	+ 113 + 104 + 8	+ 50 + 12 - 7	- 62 - 91 - 109	- 112 - 101 - 79		
150	- 88 - 83 - 66	- 42 - 13 + 17	+ 46 + 69 + 84	+ 88 + 81 + 64	+ 39 + 9 - 21	- 49 - 71 - 85	- 88 - 80 - 61		
160	- 61 - 57 - 45	- 29 - 9 + 1	+ 31 + 48 + 58	+ 61 + 55 + 44	+ 26 + 6 - 14	- 33 - 49 - 59	- 61 - 55 - 42		
170	- 32 - 30 - 25	- 15 - 5 + 6	+ 16 + 26 + 31	+ 32 + 30 + 24	+ 13 + 3 - 7	- 17 - 26 - 31	- 32 - 29 - 2		
180	0	0	0	0	0	0	0		
190	+ 8 + 26 + 0	+ 14 + 5 - 6	- 16 - 1 - 26	- 8 - 25 - 20	- 13 - 3 + 7	+ 17 + 22 + 7	+ 27 + 25 + 19		
200	+ 56 + 5 + 43	+ 28 + 9 - 11	- 31 - 45 - 53	- 56 - 51 - 41	- 26 - 6 + 14	+ 33 + 46 + 54	+ 56 + 50 + 40		
210	+ 84 + 78 + 64	+ 42 + 13 - 17	- 45 - 66 - 80	- 84 - 77 - 61	- 38 - 9 + 21	+ 48 + 67 + 81	+ 83 + 75 + 59		
220	+ 108 + 101 + 83	+ 54 + 17 - 2	- 58 - 57 - 13	- 108 - 99 - 79	- 49 - 12 + 27	+ 62 + 88 + 104	+ 108 + 98 + 76		
230	+ 132 + 123 + 100	+ 64 + 20 - 6	- 70 - 104 - 126	- 132 - 121 - 96	- 59 - 14 + 32	+ 74 + 107 + 127	+ 131 + 119 + 92		
240	+ 149 + 140 + 113	+ 73 + 3 - 9	- 79 - 117 - 14	- 149 - 137 - 109	- 67 - 16 + 36	+ 84 + 121 + 144	+ 148 + 135 + 105		
250	+ 16 + 15 + 123	+ 79 + 5 - 32	- 86 - 128 - 155	- 162 - 149 - 118	- 73 - 18 + 39	+ 91 + 132 + 157	+ 161 + 146 + 114		
260	+ 171 + 160 + 119	+ 83 + 6 - 33	- 90 - 134 - 163	- 171 - 157 - 125	- 77 - 19 + 41	+ 96 + 138 + 165	+ 170 + 154 + 120		
270	+ 174 + 163 + 132	+ 85 + 7 - 34	- 92 - 137 - 166	- 174 - 160 - 117	- 78 - 19 + 4	+ 98 + 141 + 168	+ 173 + 157 + 12		
280	+ 17 + 161 + 131	+ 84 + 7 - 34	- 91 - 135 - 164	- 17 - 158 - 116	- 77 - 19 + 42	+ 97 + 139 + 166	+ 171 + 155 + 121		
290	+ 165 + 155 + 115	+ 81 + 6 - 3	- 87 - 130 - 158	- 165 - 15 - 111	- 74 - 18 + 4	+ 93 + 134 + 159	+ 164 + 149 + 116		
300	+ 153 + 144 + 116	+ 75 + 4 - 30	- 81 - 111 - 146	- 153 - 141 - 111	- 69 - 17 + 37	+ 86 + 124 + 148	+ 152 + 138 + 117		
310	+ 137 + 128 + 104	+ 67 + 1 - 7	- 7 - 108 - 131	- 137 - 126 - 100	- 61 - 15 + 33	+ 77 + 111 + 132	+ 136 + 124 + 96		
320	+ 117 + 109 + 88	+ 57 + 18 - 3	- 6 - 92 - 111	- 117 - 107 - 85	- 52 - 13 + 8	+ 66 + 94 + 113	+ 116 + 105 + 8		
330	+ 95 + 89 + 71	+ 45 + 14 - 18	- 49 - 74 - 91	- 95 - 87 - 69	- 42 - 10 + 22	+ 52 + 76 + 92	+ 94 + 86 + 66		
340	+ 68 + 54 + 51	+ 33 + 10 - 13	- 36 - 54 - 65	- 68 - 63 - 49	- 30 - 7 + 16	+ 38 + 56 + 66	+ 68 + 62 + 47		
350	+ 40 + 37 + 30	+ 18 + 6 - 7	- 0 - 31 - 38	40 - 37 - 28	- 17 - 4 + 9	+ 32 + 38	+ 39 + 36 + 27		
360	+ 10 + 10 + 7	+ 5 + 1 - 2	- 5 - 7 - 10	- 10 - 10 - 7	- 5 - 1 +	+ 6 + 9 + 10	+ 10 + 9 + 8		
370	- 0 - 18 - 15	- 10 - 3 + 4	+ 11 + 15 + 19	+ 0 + 18 + 15	+ 10 + 2 - 5	- 11 - 17 - 19	- 20 - 18 - 14		
380	- 49 - 46 - 38	- 4 - 8 + 1	+ 26 + 39 + 46	+ 49 + 45 + 36	+ 23 + 6 - 12	- 28 - 39 - 47	- 49 - 44 - 35		
390	- 77 - 72 - 59	- 37 - 12 + 15	+ 41 + 61 + 73	+ 77 + 70 + 56	+ 35 + 9 - 19	- 43 - 62 - 74	- 76 - 69 - 54		
400	- 102 - 95 - 78	- 51 - 16 + 0	+ 55 + 81 + 97	+ 10 + 94 + 75	+ 47 + 11 - 5	- 59 - 83 - 98	- 101 - 9 - 72		

Th ti thi Tbl q l ooo

N O t th b dd d

# SATELLITE II

## Tables of the Phenomena

LXVI

Corrections for Phase

Sh., Tr.

1	2	3	4	5	6
Additional Equation of Semi-duration.	<i>p</i>	Correcting Factor for Semi-duration.	$\Delta$ 0 <sup>d</sup> .001	Correcting Factor for Reduction.	$\Delta$ 0 <sup>d</sup> .001
d 0.000000	d 0.000	.00000	0	.0000	0
o	.002	— 1	— 1	0	0
o	.004	3	1	— 1	0
o	.006	6	2	1	0
o	.008	10	3	2	— 1
o	.010	16	3	3	1
0.000000	0.012	— .00023	— 4	— .0005	— 1
o	.014	31	4	6	1
o	.016	40	5	8	1
o	.018	51	6	10	1
o	.020	64	7	13	1
0.000000	0.022	— .00077	— 7	— .0015	— 1
o	.024	91	8	18	1
o	.026	107	8	21	2
o	.028	124	9	25	2
o	.030	143	10	28	2
0.000001	0.032	— .00162	— 10	— .0032	— 2
i	.034	182	11	36	2
i	.036	205	12	41	2
i	.038	229	12	45	2
i	.040	253	12	50	2
0.000001	0.042	— .00278	— 13	— .0055	— 3
i	.044	306	14	61	3
i	.046	335	15	66	3
i	.048	364	15	72	3
i	.050	395	16	79	3
0.000001	0.052	— .00428	— 17	— .0085	— 3
i	.054	461	17	92	3
2	.056	496	18	99	3
2	.058	531	18	106	4
2	.060	568	19	113	4
0.000002	0.062	— .00607	— 20	— .0121	— 4
0.000002	0.064	— .00646	— 20	— .0129	— 4

1	2	3	4	5	6
Additional Equation of Semi-duration.	<i>p</i>	Correcting Factor for Semi-duration.	$\Delta$ 0 <sup>d</sup> .001	Correcting Factor for Reduction.	$\Delta$ 0 <sup>d</sup> .001
0.000002	d 0.064	— .00646	— 20	— .0129	— 4
2	.066	688	21	138	4
2	.068	730	21	146	4
3	.070	773	22	155	4
3	.072	818	23	164	5
3	.074	865	24	173	5
0.000003	0.076	— .00912	— 24	— .0183	— 5
3	.078	960	24	193	5
3	.080	1009	25	203	5
4	.082	1061	26	214	5
4	.084	1113	26	224	5
0.000004	0.086	— .01166	— 27	— .0235	— 6
4	.088	1221	28	246	6
4	.090	1278	29	258	6
5	.092	1335	29	270	6
5	.094	1393	29	281	6
0.000005	0.096	— .01452	— 30	— .0293	— 6
5	.098	1514	31	306	6
6	.100	1576	31	319	6
6	.102	1639	32	332	7
6	.104	1703	33	345	7
0.000006	0.106	— .01770	— 34	— .0360	— 7
7	.108	1837	34	374	7
7	.110	1905	35	388	7
7	.112	1975	36	402	8
7	.114	2047	36	418	8
0.000008	0.116	— .02118	— 36	— .0433	— 8
8	.118	2191	37	448	8
8	.120	2265	37	464	8
8	.122	2340	38	480	8
8	.124	2417	39	496	8
0.000008	0.126	— .02497	— 40	— .0513	— 8
0.000008	0.128	— .02578	— 41	— .0530	— 8

The Argument is the Annual Parallax *p* as computed from the Approximate Tables IV, V, VI.

No Constant has been added to Column 1, which gives an Additional Equation of the Semiduration. Columns 3 and 5 must be multiplied respectively into the Semiduration as taken from Tables L-LVI, and the Reduction as taken from Tables LVII-LXV, and the products taken as further corrections to these quantities.

When *p* is positive, these corrections apply to *Ingress* for the Shadow and *Egress* for Transit of Disc; when *p* is negative, they apply to *Egress* for the Shadow and *Ingress* for Transit of Disc.

# SATELLITE II

## Tables of the Phenomena

### Progress of an Eclipse

#### LXVII

#### Standard Light Curve of Eclipse

$\lambda$	Magnitude	$\lambda$	Magnitude
-30	00	00	75
28	01	+02	85
26	0	04	98
24	04	06	114
22	06	08	131
20	08	10	148
-18	011	+12	166
16	16	14	188
14	21	16	16
12	27	18	251
10	32	20	92
-08	039	+22	35
06	47	24	370
04	56	26	436
-02	66	28	539
00	075	+30	599

Th C d i t k t i f t i m l t i p l f t h d i f t h  
S h i h i t f f b y J p i t m f m t l C t f t h  
S t l i t

#### LXVIII

#### Mean Motion in Light Curve

Latitude	$\Delta$ / for 1	Latitude
00	0158	140
02	163	138
04	167	136
06	171	134
08	175	132
10	179	130
12	018	128
14	186	126
16	189	124
18	19	122
20	195	120
22	0198	118
24	200	116
26	203	114
28	205	112
30	207	110
32	0209	108
34	11	106
36	13	104
38	215	102
40	217	100
42	0218	098
44	0	096
46	21	094
48	22	092
50	223	090
52	0224	088
54	25	086
56	226	084
58	227	082
60	227	080
62	0228	078
64	28	076
66	28	074
68	28	072
70	29	070

#### LXIX

#### Equation of Motion

Variation	Correction
-02	+0002
-01	+1
00	0
+01	-1
+02	-000

Th Ag m t i t h V i  
t i l i d f m i b l  
XXXIII XXXVI t i 0  
t i i t b p p l i t t l  
Eq t i f i l l I X V I I I

Th V l i t y f k p  
d i l f t l l I X V I I I  
t d l y T l l L X I X i  
t b t k w i l l i g  
+ f D i p p  
f R p p a r



# SATELLITE III

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## Approximate Tables

of

## Heliocentric and Geocentric Conjunction

# SATELLITE III

## Approximate Tables of Conjunction

### I Epochs for Approximate Conjunction

1	2	3	4	5	6	7	8	9	10	11	
Year	Conjunction	Variation for 100 <sup>d</sup>	$\alpha$	Variation for 100 <sup>d</sup>	$\beta$	$\gamma$	$\delta$	$\epsilon$	$\zeta$	$\eta$	
<b>1850</b>	<sup>d</sup> 3'3152	+ 0,5	<sup>d</sup> 1788'5	0	<sup>d</sup> 335'59	2'8	<sup>d</sup> 1'88	<sup>d</sup> 5'97	<sup>d</sup> 5'27	<sup>d</sup> 3'95	The constant $-0^d.1300$ has been applied to each entry in column 2, and $-0^d.12$ to each entry in columns 6-11.
<b>1851</b>	3'8012	0,8	2154'1	+ '1	302'19	3'0	0'71	6'52	5'86	4'55	
<b>*1852</b>	4'2872	+ 0,5	2519'8	0	268'79	3'2	6'60	7'08	6'45	5'15	
<b>1853</b>	3'7732	0,0	2885'4	0	235'39	3'4	5'44	0'48	7'04	5'76	
<b>1854</b>	4'2589	+ 0,5	3250'9	0	201'99	3'7	4'28	1'03	0'48	6'36	
<b>1855</b>	4'7449	- 1,4	3616'5	- '1	168'59	3'9	3'12	1'58	1'07	6'96	
<b>*1856</b>	5'2301	0,0	3981'7	0	135'20	4'1	1'95	2'14	1'66	0'41	
<b>1857</b>	4'7159	- 0,5	14'5	0	101'80	4'3	0'79	2'69	2'25	1'02	
<b>1858</b>	5'2014	0,0	379'9	0	68'40	4'6	6'68	3'24	2'84	1'62	
<b>1859</b>	5'6871	+ 0,5	745'4	0	35'00	4'8	5'52	3'80	3'43	2'22	
<b>*1860</b>	6'1731	0,8	1111'0	+ '1	1'60	5'0	4'35	4'35	4'02	2'83	Column 2 corrected by the equations from the following tables, gives superior conjunction as required for Eclipses and Occultations. To find inferior conjunction for Shadows and Transits, add (or subtract) one half the synodic period, $3^d.5832$ , to the entries in each of the columns 2, 4, 6-11.
<b>1861</b>	5'6591	+ 1,4	1476'7	+ '1	367'09	5'3	3'19	4'90	4'61	3'43	
<b>1862</b>	6'1454	0,0	1842'4	0	333'69	5'5	2'03	5'46	5'20	4'03	
<b>1863</b>	6'6311	- 1,4	2207'9	- '1	300'29	5'7	0'87	6'01	5'79	4'64	
<b>*1864</b>	7'1164	2,7	2573'1	- '2	266'89	5'9	6'76	6'56	6'38	5'24	
<b>1865</b>	6'6011	2,2	2938'0	- '1	233'50	6'2	5'59	7'12	6'97	5'84	
<b>1866</b>	7'0861	- 4,1	3303'0	- '2	200'09	6'4	4'43	0'51	0'40	6'45	
<b>1867</b>	0'4039	- 1,4	3660'4	- '1	159'53	364'7	3'15	1'06	0'98	7'03	
<b>*1868</b>	0'8892	0,0	4025'7	0	126'14	364'9	1'99	1'61	1'57	0'49	
<b>1869</b>	0'3749	+ 1,9	58'6	+ '1	92'74	365'2	0'83	2'17	2'16	1'09	
<b>1870</b>	0'8614	3,0	424'5	+ '2	59'34	0'1	6'72	2'72	2'75	1'70	
<b>1871</b>	1'3482	+ 3,6	790'6	+ '2	25'94	0'3	5'55	3'27	3'34	2'30	
<b>*1872</b>	1'8352	2,7	1156'9	+ '2	391'43	0'6	4'39	3'83	3'93	2'90	
<b>1873</b>	1'3220	+ 1,4	1523'0	+ '1	358'03	0'8	3'23	4'38	4'52	3'51	
<b>1874</b>	1'8083	- 0,3	1888'8	0	324'63	1'0	2'07	4'93	5'11	4'11	
<b>1875</b>	2'2939	2,7	2254'2	- '2	291'23	1'3	0'90	5'49	5'70	4'71	
<b>*1876</b>	2'7787	- 3,3	2619'1	- '2	257'83	1'5	6'79	6'04	6'29	5'32	
<b>1877</b>	2'2632	2,5	2983'9	- '2	224'44	1'7	5'63	6'59	6'88	5'92	
<b>1878</b>	2'7479	2,7	3348'6	- '2	191'04	1'9	4'47	7'15	0'32	6'52	
<b>1879</b>	3'2326	- 0,5	3713'5	0	157'64	2'2	3'30	0'54	0'91	7'12	
<b>*1880</b>	3'7182	+ 1,4	4078'9	+ '1	124'24	2'4	2'14	1'10	1'50	0'58	
<b>1881</b>	3'2044	+ 2,7	112'1	+ '2	90'84	2'6	0'98	1'65	2'09	1'18	
<b>1882</b>	3'6912	2,7	478'2	+ '2	57'45	2'8	6'87	2'20	2'68	1'78	
<b>1883</b>	4'1779	1,6	844'3	+ '1	24'05	3'1	5'71	2'76	3'27	2'39	
<b>*1884</b>	4'6643	+ 0,5	1210'2	0	389'53	3'3	4'54	3'31	3'86	2'99	
<b>1885</b>	4'1502	- 0,8	1575'8	- '1	356'13	3'5	3'38	3'86	4'45	3'59	
<b>1886</b>	4'6356	- 1,9	1941'0	- '1	322'74	3'7	2'22	4'42	5'04	4'20	
<b>1887</b>	5'1207	1,6	2306'1	- '1	289'34	4'0	1'06	4'97	5'63	4'80	
<b>*1888</b>	5'6058	1,4	2671'2	- '1	255'94	4'2	6'94	5'52	6'22	5'40	
<b>1889</b>	5'0911	- 0,5	3036'4	0	222'54	4'4	5'78	6'08	6'81	6'01	
<b>1890</b>	5'5766	+ 1,4	3401'8	+ '1	189'14	4'6	4'62	6'63	0'24	6'61	
<b>1891</b>	6'0629	+ 1,9	3767'6	+ '1	155'75	4'9	3'46	0'03	0'83	0'06	
<b>*1892</b>	6'5493	1,6	4133'4	+ '1	122'35	5'1	2'29	0'58	1'42	0'66	
<b>1893</b>	6'0357	1,9	166'7	+ '1	88'95	5'3	1'13	1'14	2'01	1'27	
<b>1894</b>	6'5221	+ 0,8	532'6	+ '1	55'55	5'5	7'02	1'69	2'60	1'87	
<b>1895</b>	7'0082	- 0,5	898'3	0	22'15	5'8	5'86	2'24	3'19	2'47	
<b>*1896</b>	0'3273	- 0,8	1256'5	- '1	380'47	364'1	4'58	2'78	3'77	3'07	
<b>1897</b>	6'9792	1,9	1629'0	- '1	354'23	6'2	3'54	3'35	4'37	3'68	
<b>1898</b>	0'2978	1,1	1986'9	- '1	313'68	364'5	2'25	3'89	4'95	4'27	
<b>1899</b>	0'7832	- 1,1	2352'1	- '1	280'28	364'8	1'09	4'44	5'54	4'88	
<b>1900</b>	1'2685	+ 0,5	2717'4	0	246'88	365'0	6'98	5'00	6'13	5'48	
Period	7'1664	...	4332'6	...	398'88	365'3	7'05	7'16	7'15	7'15	

# SATELLITE III

## Approximate Tables of Conjunction

I continued

Epochs for Approximate Conjunction

Year	Conjunction	V to for 100 <sup>d</sup>	$\alpha$	V ation for 100 <sup>d</sup>	$\beta$	$\gamma$	$\delta$	$\epsilon$	$\zeta$	$\eta$	
1900	<sup>d</sup> 1 685	+ 05	717 4		<sup>d</sup> 246 88	365	698	50	<sup>d</sup> 6 13	<sup>d</sup> 5 48	<p>The constant -0<sup>d</sup> 1300 has been applied to each entry in column and -0<sup>d</sup> 12 to each entry in columns 6 11</p> <p>Column 2 corrected by the equations of the following tables gives superior conjunctions required for eclipses and Occultations. To find inferior conjunction for Shadows and Transits add (or subtract) one half the synodic period 3<sup>d</sup> 583 to the entries in each of the columns 2 4 6-11</p>
1901	1 7545	14	3083 0	+ 1	213 48	0	582	555	67	68	
1902	2 407	+ 08	3448 7	+ 1	180 08		466	611	016	669	
1903	2 7 68	00	3814 4	0	146 69	04	349	666	075	014	
1904	3 1 5	- 05	4179 9	0	113 9	06	33	006	134	074	
1905	6981	08	1 7	- 1	79 89	09	117	061	193	134	
1906	3 1835	- 08	578 0	- 1	46 49	11	001	116	5	195	
1907	3 6690	- 05	943 3	0	13 09	13	589	17	311	255	
1908	4 1445	00	13 86	0	378 58	16	473	7	370	315	
1909	3 6403	00	1674 1	0	345 18	18	357	8	49	376	
1910	4 1 60	+ 11	039 6	+ 1	311 8		241	338	488	436	
1911	4 61	+ 03	405 3	0	278 38	2	124	393	547	496	
1912	5 0980	+ 05	77 9	0	244 99	25	008	448	606	557	
1913	4 5840	0	3136 5	0	211 59	7	597	504	665	617	
1914	5 0697	- 08	35 0	- 1	178 1	29	481	559	008	677	
1915	5 5551	11	3867 3	- 1	144 79	31	365	614	067	02	
1916	6 0405	- 14	4 3 5	- 1	111 39	34	248	670	16	083	
1917	5 5257	00	65 1	0	78 00	36	13	010	185	143	
1918	6 115	+ 05	630 6	0	44 60	38	016	065	44	203	
1919	6 4974	08	996	+ 1	1120	40	605	10	303	64	
1920	6 9835	14	1361 9	+ 1	376 68	43	489	175	36	324	
1921	6 4697	+ 19	1727 7	+ 1	343 9	45	32	231	421	385	
1922	6 956	- 19	093 6	- 1	309 88	47	256	86	480	445	
1923	748	03	451 5		69 3	363 0	128	340	538	504	
1924	7605	33	2816 9	-	35 93	363 3	01	396	597	564	
1925	0245	36	3181 6	- 2	202 53	363 5	601	451	656	625	
1926	07 95	- 33	3546 3	- 2	169 13	363 7	484	506	714	685	
1927	12140	- 14	3911 1	- 1	135 73	363 9	368	562	058	030	
*1928	16993	+ 5	476 3	0	10 33	364 2	25	617	117	090	
1929	185	27	309 3	+ 2	68 93	364 4	136	673	176	151	
1930	167	30	675 4	+ 1	35 54	364 6	00	012	35	211	
1931	1588	+ 33	1041 6	+	14	364 8	608	068	294	71	
1932	6458	7	1407 7	+ 2	36 6	365 1	49	123	353	332	
1933	13 5	+ 08	1773 8	+ 1	334 3	00	376	178	412	392	
1934	6186	- 08	139 5	- 1	300 83	03	260	34	471	452	
1935	3140	7	25 48	-	267 43	05	143	89	530	513	
*1936	35888	- 36	869 7	-	34 03	7	07	344	589	573	
1937	373	36	334 4	- 2	200 63	09	616	400	648	634	
1938	35577	19	3599 1	- 1	167 24	12	50	455	707	694	
1939	447	- 05	3964 1	0	133 84	14	383	510	51	039	
1940	4583	+ 19	439 5	+ 1	100 44	16	67	566	110	099	
1941	4147	+ 7	362 8	+	67 4	18	151	621	169	159	
1942	4514	2	78 9	+ 1	33 64	21	035	66	228	220	
1943	49880	+ 14	1094 9	+ 1	24	23	624	016	287	280	
1944	54742	00	146 7	0	365 73	25	507	072	346	341	
1945	49600	- 08	18 62	- 1	33 33	28	391	127	405	401	
1946	54454	- 16	191 4	- 2	298 93	30	75	182	464	461	
1947	59306	16	556 5	- 1	265 54	3	159	238	523	52	
1948	64157	- 08	917	- 1	3 14	34	04	293	582	582	
1949	5901	00	387	0	198 74	37	631	348	641	642	
1950	63869	+ 14	365 5	+ 1	165 34	39	515	404	700	703	
P od	71664		4332 6		398 88	365 3	705	716	715	715	



# SATELLITE III

## Approximate Tables of Conjunction

I continued

Epochs for Approximate Conjunction

1	2	3	4	5	6	7	8	9	10	11	
Year	Conjunction	Variation for 100 <sup>d</sup>	$\alpha$	Variation for 100 <sup>d</sup>	$\beta$	$\gamma$	$\delta$	$\epsilon$	$\zeta$	$\eta$	
1950	6'3869	+ 1,4	3652'5	+ '1	165'34	3'9	5'15	4'04	7'00	7'03	<p>The constant <math>-0^d.1300</math> has been applied to each entry in column 2, and <math>-0^d.12</math> to each entry in columns 6-11.</p> <p>Column 2 corrected by the equations of the following tables, gives superior conjunction as required for Eclipses and Occultations. To find inferior conjunction for Shadows and Transits, add (or subtract) one half the synodic period, <math>3^d.5832</math>, to the entries in each of the columns 2, 4, 6-11.</p>
1951	6'8732	1,4	4018'3	+ '1	131'94	4'1	3'99	4'59	0'44	0'48	
*1952	0'1930	1,6	44'3	+ '1	91'38	362'4	2'71	5'13	1'01	1'07	
1953	6'8458	1,1	417'3	+ '1	65'15	4'6	1'66	5'70	1'62	1'68	
1954	0'1655	+ 0,3	775'9	'0	24'58	362'9	0'38	6'24	2'19	2'27	
1955	0'6514	- 0,3	1141'5	'0	390'07	363'1	6'27	6'79	2'78	2'88	
*1956	1'1370	- 1,1	1506'8	- '1	356'67	363'3	5'11	0'19	3'37	3'48	
1957	0'6224	- 1,6	1872'1	- '1	323'27	363'6	3'95	0'74	3'96	4'08	
1958	1'1075	- 1,1	2237'2	- '1	289'87	363'8	2'79	1'30	4'55	4'69	
1959	1'5929	0,0	2602'5	'0	256'48	364'0	1'62	1'85	5'14	5'29	
*1960	2'0786	+ 1,1	2968'0	+ '1	223'08	364'2	0'46	2'40	5'73	5'90	
1961	1'5648	+ 0,8	3333'7	+ '1	189'68	364'5	6'35	2'96	6'32	6'50	
1962	2'0508	+ 0,5	3699'4	'0	156'28	364'7	5'19	3'51	6'91	7'10	
1963	2'5368	- 0,5	4064'9	'0	122'88	364'9	4'02	4'06	0'35	0'55	
*1964	3'0223	0,8	97'8	- '1	89'48	365'2	2'86	4'62	0'94	1'15	
1965	2'5078	- 1,1	463'1	- '1	56'09	0'1	1'70	5'17	1'53	1'76	
1966	2'9931	0,0	828'4	'0	22'69	0'3	0'54	5'72	2'12	2'36	
1967	3'4789	- 1,4	1193'9	- '1	388'17	0'6	6'42	6'28	2'71	2'97	
*1968	3'9641	+ 0,5	1559'1	'0	354'78	0'8	5'26	6'83	3'30	3'57	
1969	3'4500	0,8	1924'7	+ '1	321'38	1'0	4'10	0'23	3'89	4'17	
1970	3'9361	1,1	2290'3	+ '1	287'98	1'2	2'94	0'78	4'48	4'78	
1971	4'4222	+ 0,3	2656'0	'0	254'58	1'5	1'77	1'33	5'07	5'38	
*1972	4'9081	+ 0,5	3021'6	'0	221'18	1'7	0'61	1'89	5'66	5'98	
1973	4'3940	- 0,8	3387'2	- '1	187'79	1'9	6'50	2'44	6'25	6'59	
1974	5'8795	1,4	3753'5	- '1	154'39	2'1	5'34	3'00	6'84	0'04	
1975	5'3647	- 1,1	4117'7	- '1	120'99	2'4	4'18	3'55	0'27	0'64	
*1976	5'8501	+ 1,9	150'4	+ '1	87'59	2'6	3'01	4'10	0'86	1'24	
1977	5'3365	- 3,0	516'2	- '2	54'19	2'8	1'85	4'66	1'45	1'85	
1978	5'8212	+ 0,3	881'0	'0	20'79	3'1	0'69	5'21	2'04	2'45	
1979	6'3070	1,9	1246'6	+ '1	386'28	3'3	6'58	5'76	2'63	3'05	
*1980	6'7935	1,6	1612'5	+ '1	352'88	3'5	5'41	6'32	3'22	3'66	
1981	6'2798	+ 1,4	1978'4	+ '1	319'48	3'7	4'25	6'87	3'81	4'26	
1982	6'7661	- 0,4	2244'2	'0	286'09	4'0	3'09	0'27	4'40	4'86	
1983	0'0853	- 2,7	2702'4	- '2	245'52	362'3	1'81	0'81	4'98	5'46	
*1984	0'5701	- 3,0	3067'3	+ '1	212'12	362'5	0'65	1'36	5'57	6'06	
1985	0'0563	- 4,1	3432'1	- '3	178'72	362'7	6'54	1'92	6'16	6'66	
1986	0'5389	- 2,7	3796'6	- '2	145'33	363'0	5'38	2'47	6'75	0'11	
1987	1'0236	- 0,8	4161'4	- '1	111'93	363'2	4'21	3'02	0'19	0'72	
*1988	1'5091	+ 0,8	194'2	+ '1	78'53	363'4	3'05	3'58	0'78	1'32	
1989	0'9952	2,5	559'9	+ '1	45'13	363'6	1'89	4'13	1'37	1'92	
1990	1'4818	3,6	925'9	+ '2	11'73	363'9	0'73	4'68	1'96	2'53	
1991	1'9688	+ 3,0	1292'2	+ '2	377'22	364'1	6'61	5'24	2'55	3'13	
*1992	2'4557	2,5	1658'4	+ '1	343'82	364'3	5'45	5'79	3'14	3'73	
1993	1'9423	+ 0,3	2024'3	'0	310'42	364'5	4'29	6'34	3'73	4'34	
1994	2'4282	- 1,4	2389'9	- '1	277'03	364'8	3'13	6'90	4'32	4'94	
1995	2'9134	3,0	2755'1	- '2	243'63	365'0	1'96	0'29	4'91	5'54	
*1996	3'3980	- 3,6	3119'9	- '2	210'23	0'0	0'80	0'85	5'50	6'15	
1997	2'8825	3,3	3484'6	- '2	176'83	0'2	6'69	1'40	6'09	6'75	
1998	3'3670	- 1,9	3849'4	- '1	143'43	0'4	5'53	1'95	6'68	0'20	
1999	3'8521	0,0	4214'5	'0	110'03	0'6	4'36	2'51	0'12	0'80	
*2000	4'3378	...	247'3	...	76'64	0'9	3'20	3'06	0'70	1'41	
Period	7'1664	...	4332'6	...	398'88	365'3	7'05	7'16	7'15	7'15	

# SATELLITE III

## Approximate Tables of Conjunction

II

Motions of the Arguments

Syn R v	Date	3 $\alpha \beta \gamma$	4 $\delta$	5	6 $\zeta$	7 $\eta$
1	J nuary 7 1664	7 17	0 1	01	01	0 01
2	14 33 8	14 33	0 3		0 0	0 02
3	1 499	1 50	0 35	3	3	0 04
4	8 6655	8 67	0 46	0 04	0 05	0 5
5	Feb rua y 4 8319	35 83	0 58	0 05	0 06	0 06
6		11 9983	43 0	0 07	0 07	0 07
7		19 1647	50 16	0 08	0 08	0 08
8		6 3311	57 33	0 09	0 09	0 09
9	Ma ch 5 4975	64 50	1 04	0 10	1	0 11
10	1 6639	71 66	1 15	0 11	0 12	0 12
11		19 83 3	78 83	0 12	0 13	0 13
12		26 9966	86 00	0 13	0 14	0 14
13	Ap il 3 1630	93 16	1 50	0 14	0 15	0 15
14	10 3 94	1 0 33	1 6	0 15	0 16	0 17
15	17 4958	107 50	1 73	0 16	0 17	0 18
16		24 6622	114 66	0 17	0 19	0 19
17	May 1 8286	121 83	1 96	0 18	0 20	0 0
18		8 9950	129 00	0 0	0 21	21
19		16 1614	136 16	0 1	0 2	0 2
20		3 3277	143 33	0 2	0 23	0 24
21		30 4941	150 49	0 23	0 24	0 25
22	J une 6 66 5	157 66	54	0 4	0 5	0 6
23		13 8 69	164 83	0 5	0 27	0 7
24		9933	171 99	0 26	0 8	0 28
25		8 1597	179 16	0 7	0 29	0 30
26	July 5 3261	186 33	3 0	0 28	0 30	0 31
27		1 49 5	193 49	0 29	0 31	32
28		19 6588	00 66	0 3	0 3	33
29		6 8 5	07 83	0 32	0 34	0 34
30	August 2 9916	14 99	3 46	0 33	0 35	0 36
31		10 1580	22 16	0 34	0 36	0 37
32		17 3 44	2 9 32	0 35	0 37	0 38
33		4 49 8	236 49	0 36	0 38	0 39
34		31 657	43 66	0 37	0 39	0 40
35	S ptember 7 8 36	50 82	4 04	0 38	0 40	0 41
36		14 9899	57 99	0 39	0 42	0 43
37		1563	265 16	0 4	0 43	0 44
38		9 3 7	272 32	0 41	0 44	0 45
39	October 6 4891	79 49	4 50	42	0 45	0 46
40		13 6555	86 66	0 43	0 46	0 47
41		0 8 19	293 82	0 45	0 47	0 49
42		7 9883	300 99	0 46	0 49	0 50
43	November 4 1547	3 8 15	4 96	0 47	0 50	0 51
44		11 3 10	315 3	0 48	0 51	0 5
45		18 4874	3 2 49	0 49	0 52	0 53
46		25 6538	3 9 65	0 50	0 53	0 54
47	D cembe 8 02	336 8	5 43	0 51	0 54	0 56
48		9 9866	343 99	0 5	0 56	57
49		17 1530	351 15	53	0 57	58
50		24 3194	358 32	0 54	0 58	0 59
51		31 4857	365 49	55	0 59	0 60

I L p Y d m i h t h d t O l m b y ft F b 8

III	Equation of Conjunction	Argument $a$	Ec., Oc., Sh., Tr.
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Applied Constant:  $\pm 0.01200$ .

# SATELLITE III

## Approximate Tables of Conjunction

IV      Equation of Geocentric Conjunction      Argument  $\beta$       Oc, Tr

$\beta$	Equat n	$\Delta$	$\beta$	Equat n	$\Delta$	$\beta$	Equat on	$\Delta$	$\beta$	Equation	$\Delta$
0	-0 4	- 43	100	- 2564	+ 6	200	-0 0384	+ 29	300	+0 1771	+ 6
2	486	43	102	551	7	202	3 6	29	302	178	5
4	571	4	104	536	8	204	68	29	304	1790	4
6	656	42	106	5 8	9	206	1	9	306	1797	3
8	740	42	108	2499	10	208	153	29	308	1801	
10	8 4	4	110	479	11	210	95	29	310	1803	+ 1
12	- 9 7	- 4	112	-0 2456	+ 1	212	-0 0037	- 29	312	+0 1803	- 1
14	99	41	114	43	13	214	+ 0	29	314	1801	
16	1 71	40	116	406	14	216	77	28	316	1797	3
18	1151	40	118	2378	14	218	134	29	318	1791	4
20	1 30	39	120	349	15	220	191	28	320	1782	5
22	0 13 7	- 38	122	-0 2319	+ 16	222	+0 0246	+ 28	322	+0 1771	- 6
24	383	38	124	87	17	224	30	8	324	1757	7
26	1458	37	126	253	17	226	358	28	326	1742	8
28	153	36	128	18	18	228	413	27	328	17 4	10
30	1600	35	130	182	19	230	467	27	330	1702	11
32	-0 1668	- 34	132	- 2144	+ 19	232	+0 0521	+ 27	332	+0 1679	- 1
34	1734	33	134	105	20	234	575	7	334	1653	14
36	1799	3	136	065	0	236	628	27	336	1625	15
38	1860	30	138	2025	1	238	681	26	338	1594	16
40	19 0	29	140	1982	22	240	733	26	340	1561	17
42	-0 1977	- 28	142	-0 1938	+ 22	242	+0 0784	+ 25	342	+0 1525	- 19
44	032	7	144	1894	3	244	834	5	344	1487	0
46	084	26	146	1848	3	246	883	25	346	1445	21
48	134	5	148	18 2	4	248	93	4	348	1401	2
50	18	23	150	1754	4	250	980	24	350	1356	24
52	-0 26	- 22	152	-0 1706	+ 24	252	+0 10 7	- 3	352	+0 1307	- 25
54	269	1	154	1657	5	254	1073	23	354	1 56	26
56	2308	19	156	16 7	25	256	1118	23	356	1202	28
58	346	18	158	1556	26	258	1163	2	358	1145	9
60	380	17	160	1504	26	260	1206	1	360	1087	3
62	-0 241	- 15	162	-0 1452	+ 6	262	+0 1248	+ 21	362	+0 1026	- 31
64	441	14	164	1399	7	264	1288	20	364	963	32
66	2468	13	166	1346	27	266	1327	19	366	898	33
68	49	12	168	1 9	7	268	1365	19	368	831	34
70	514	11	170	1 37	8	270	140	18	370	761	35
72	-0 534	- 9	172	-0 118	+ 28	272	+0 1438	+ 18	372	+0 0690	- 36
74	551	8	174	11 7	8	274	147	17	374	616	37
76	565	7	176	1 71	8	276	1505	16	376	54	38
78	577	6	178	1015	8	278	1536	15	378	464	39
80	587	5	180	959	28	280	1566	15	380	386	40
82	-0 2595	- 3	182	0 902	+ 29	282	+ 1594	+ 14	382	+0 0306	- 40
84	6 0		184	845	9	284	16 1	13	384	226	41
86	603	1	186	788	29	286	1646	1	386	144	41
88	603	0	188	731	29	288	1669	11	388	+ 61	42
90	6 3	+ 1	190	673	29	290	169	10	390	- 3	42
92	-0 599	+ 3	192	-0 0615	+ 29	292	+0 171	+ 10	392	-0 0107	- 42
94	593	4	194	557	29	294	17 8	9	394	192	43
96	2585	5	196	500	9	296	1744	8	396	277	43
98	575	5	198	44	29	298	1759	7	398	363	43
100	-0 2564	+ 6	200	-0 0384	+ 29	300	+0 1771	+ 6	400	-0 0448	- 43

Appl d C t t Th Eq ti f f bl IV t d by th f T bl V VI ga th An l P ll p whi h m t b ppl d f O l t ti  
d T t t th ti f th Cl m s f T bl I d whi h l rv g m t f T bl LXV f mp t l g th f t f J pit ph

# SATELLITE III

## Approximate Tables of Conjunction

V	Equation of Geocentric Conjunction										Arguments $\alpha, \beta$						Oc., Tr.				
$\beta$ $\alpha$	0 <sup>d</sup>	10 <sup>d</sup>	20 <sup>d</sup>	30 <sup>d</sup>	40 <sup>d</sup>	50 <sup>d</sup>	60 <sup>d</sup>	70 <sup>d</sup>	80 <sup>d</sup>	90 <sup>d</sup>	100 <sup>d</sup>	110 <sup>d</sup>	120 <sup>d</sup>	130 <sup>d</sup>	140 <sup>d</sup>	150 <sup>d</sup>	160 <sup>d</sup>	170 <sup>d</sup>	180 <sup>d</sup>	190 <sup>d</sup>	200 <sup>d</sup>
0	300	275	252	231	213	199	188	183	182	185	191	199	210	222	235	247	259	270	281	291	301
100	336	311	286	262	240	221	206	194	187	185	186	190	197	206	216	226	237	247	257	266	276
200	372	347	320	294	268	245	225	208	196	188	183	183	186	191	198	206	216	224	233	242	252
300	406	380	354	326	298	270	245	224	206	193	184	178	177	179	183	189	196	203	211	220	228
400	437	415	387	358	327	297	267	241	219	200	186	176	171	169	170	174	179	184	191	199	207
500	466	445	418	388	356	323	290	260	233	210	191	177	168	162	160	161	164	168	174	180	187
600	492	473	447	417	384	348	313	279	248	221	198	180	167	158	153	151	152	155	159	163	169
700	513	496	472	443	409	373	335	299	265	234	208	186	169	157	149	145	143	144	146	150	155
800	530	516	494	466	433	396	357	319	282	249	219	194	174	159	148	141	138	137	137	140	143
900	542	531	512	486	453	417	378	338	300	264	232	204	181	164	151	141	136	133	132	133	135
1000	549	542	525	501	471	436	397	357	318	280	246	216	191	171	156	145	137	133	130	129	130
1100	551	547	534	513	485	451	414	374	335	297	262	230	204	182	165	151	142	136	132	130	129
1200	547	547	538	520	495	464	428	390	352	314	278	246	218	195	176	161	150	142	137	133	131
1300	539	542	536	522	501	473	440	404	367	330	295	263	234	210	190	174	161	152	146	140	137
1400	525	531	530	520	502	478	449	416	381	346	312	280	251	227	206	189	175	165	157	151	146
1500	507	517	519	513	500	480	455	425	394	361	329	298	270	245	224	207	192	182	172	165	159
1600	484	497	504	502	493	478	457	432	404	374	345	316	289	265	244	226	210	199	189	181	174
1700	457	473	483	486	482	472	454	436	412	386	360	333	308	286	265	248	232	220	210	200	192
1800	427	446	460	466	468	463	452	437	418	397	374	350	328	306	287	270	254	242	231	222	213
1900	394	415	432	444	450	450	445	435	422	405	386	366	346	327	309	293	278	266	255	244	235
2000	360	383	402	418	428	434	435	431	422	411	396	380	364	347	331	316	301	290	278	268	258
2100	324	348	370	389	404	415	422	423	421	414	405	393	380	366	352	338	325	314	303	293	283
2200	288	312	337	359	378	394	406	413	417	415	411	404	394	384	372	360	348	338	328	318	308
2300	252	276	302	327	350	371	388	401	410	414	415	413	407	400	391	381	371	361	351	342	333
2400	217	241	268	295	322	346	368	387	401	411	417	419	417	413	407	400	391	383	374	365	356
2500	183	207	234	263	292	321	347	370	390	405	416	422	425	425	422	417	410	403	396	388	379
2600	152	175	202	232	263	295	325	353	377	397	413	424	430	434	433	431	426	421	415	408	400
2700	125	146	172	202	235	269	302	334	362	387	407	422	433	440	442	442	440	436	431	426	419
2800	100	119	144	174	208	243	279	314	346	375	399	418	433	443	449	451	451	449	446	441	436
2900	80	96	120	148	182	219	257	294	329	361	389	412	429	443	452	457	459	459	457	454	450
3000	65	78	99	127	160	197	236	274	312	346	377	403	424	440	451	459	463	465	465	463	460
3100	55	64	83	109	140	176	216	255	294	330	363	392	416	434	448	458	465	467	469	469	467
3200	50	56	71	94	124	159	197	237	276	314	349	379	405	425	441	453	462	467	469	471	471
3300	50	53	64	85	112	144	181	220	259	297	333	365	392	414	432	446	456	462	467	469	471
3400	55	54	62	79	103	133	168	205	243	281	316	349	377	411	420	435	447	455	461	465	467
3500	65	61	65	78	98	125	157	191	228	264	299	332	360	385	405	421	435	444	451	456	461
3600	81	73	73	82	98	121	149	180	214	249	282	314	342	367	388	405	420	430	438	445	450
3700	100	90	86	90	102	120	144	172	203	235	266	296	324	348	369	387	402	413	422	430	436
3800	125	111	103	103	110	124	143	166	193	221	250	278	305	328	349	367	382	394	404	413	420
3900	153	136	125	120	122	131	145	163	185	210	235	261	285	307	327	345	361	372	383	393	401
4000	184	164	150	141	138	141	150	163	180	200	222	244	266	287	306	322	338	350	361	371	380
4100	217	195	178	165	157	155	158	166	178	193	210	229	248	266	284	300	314	326	337	348	357
4200	252	229	208	192	179	172	169	171	178	188	200	215	231	246	262	277	291	302	313	324	333
4300	288	264	241	221	204	192	183	180	180	185	193	203	215	228	241	254	267	278	289	299	309
4400	325	300	275	252	231	214	200	190	185	185	187	193	201	211	222	232	244	254	264	274	284
4500	360	335	309	283	259	237	218	203	193	187	184	185	189	195	204	213	222	231	241	250	260

The unit in this Table equals 0<sup>d</sup>.0000.

Applied Constant: +0<sup>d</sup>.0300.

The entries are all positive.

The Equation of this Table to be added to that of Table IV.

# SATELLITE III

## Approximate Tables of Conjunction

*V continued*

Equation of Geocentric Conjunction

Arguments  $\alpha \beta$

Oc, Tr

$\beta$ $\alpha$	200 <sup>d</sup>	210 <sup>d</sup>	220 <sup>d</sup>	230 <sup>d</sup>	240 <sup>d</sup>	250 <sup>d</sup>	260 <sup>d</sup>	270 <sup>d</sup>	280 <sup>d</sup>	290 <sup>d</sup>	300 <sup>d</sup>	310 <sup>d</sup>	320 <sup>d</sup>	330 <sup>d</sup>	340 <sup>d</sup>	350 <sup>d</sup>	360 <sup>d</sup>	370 <sup>d</sup>	380 <sup>d</sup>	390 <sup>d</sup>	400 <sup>d</sup>
$\alpha$																					
0	301	310	30	331	34	354	367	379	391	402	410	416	418	417	411	400	385	367	345	32	297
100	276	86	96	307	319	333	347	362	376	391	404	415	422	426	46	41	412	397	379	357	333
200	5	61	271	283	95	310	326	34	360	378	395	411	44	433	439	440	435	425	411	391	369
300	8	238	48	259	7	87	34	32	342	363	384	405	43	438	449	455	456	451	440	44	403
400	207	15	224	36	249	264	8	302	324	348	37	396	419	439	456	467	473	473	467	454	435
500	187	195	04	14	7	24	61	281	305	331	358	386	413	438	460	476	487	492	490	480	464
600	169	176	184	194	206	1	40	61	85	313	343	374	44	433	460	480	497	507	509	503	490
700	155	160	168	177	88	0	0	242	67	295	327	360	393	426	456	483	53	517	523	521	512
800	143	148	154	162	172	185	203	24	249	278	310	345	381	416	450	480	505	523	533	535	529
900	135	138	143	150	159	171	187	07	232	60	93	329	366	404	440	474	502	524	539	544	542
1000	13	13	135	141	148	159	174	193	16	244	76	312	350	389	428	464	495	50	539	548	549
1100	129	19	131	135	141	150	163	180	2	229	61	96	334	373	413	450	484	512	534	547	551
1200	131	13	131	133	137	144	156	171	190	15	245	279	316	355	395	434	469	500	54	540	548
1300	137	135	133	134	137	14	151	164	181	03	31	63	298	336	376	414	451	483	509	528	539
1400	146	143	140	139	140	143	149	159	174	193	18	247	8	316	355	392	49	462	490	512	526
1500	159	154	150	147	146	147	151	158	170	186	207	33	263	296	33	369	405	438	467	491	508
1600	174	168	163	158	155	154	155	160	168	180	198	20	46	76	309	344	378	411	441	466	486
1700	192	185	179	173	168	165	163	165	169	178	191	209	230	256	86	317	350	381	411	438	459
1800	213	5	197	190	183	178	174	17	173	177	186	200	216	238	263	291	321	350	380	406	429
1900	235	226	18	09	201	194	187	182	180	180	184	192	204	20	241	265	291	318	346	373	397
2000	258	49	240	31	221	21	203	195	189	185	184	187	194	205	0	39	261	286	312	338	363
2100	283	73	64	53	243	231	221	10	00	192	187	184	186	191	201	15	233	54	77	302	327
2200	38	298	288	77	65	53	40	6	14	202	19	184	180	180	184	192	205	22	243	266	29
2300	333	33	313	301	289	75	60	45	29	14	199	187	177	171	169	172	180	193	210	31	54
2400	356	347	337	35	31	98	282	264	46	227	8	191	176	165	157	155	158	166	179	197	219
2500	379	370	360	349	336	31	304	285	264	24	220	198	178	161	148	140	138	141	151	166	186
2600	40	392	38	372	359	343	325	305	282	258	33	207	183	161	143	129	121	120	125	137	155
2700	419	412	404	39	380	365	346	36	32	75	247	218	190	163	140	12	109	103	104	112	127
2800	436	49	42	412	399	385	367	346	31	293	63	31	199	169	141	118	100	89	86	9	102
2900	450	444	438	49	418	404	385	365	339	311	79	245	211	177	145	118	96	80	7	73	82
3000	460	456	45	443	433	40	403	38	357	329	96	261	24	188	153	122	96	78	65	61	66
3100	467	465	46	456	445	433	418	398	374	345	31	77	239	201	163	19	100	77	61	54	55
3200	471	469	466	46	455	444	430	41	389	361	329	93	255	216	177	14	108	8	63	5	50
3300	471	471	469	466	461	45	440	43	402	376	345	310	7	33	193	155	121	91	69	55	50
3400	467	468	469	467	463	457	447	432	413	389	360	37	290	251	11	173	137	106	81	64	54
3500	461	463	465	465	463	458	450	438	42	400	374	343	38	270	231	193	156	14	97	77	64
3600	450	454	457	459	459	456	451	441	428	410	386	358	36	290	253	215	179	146	117	94	80
3700	436	442	446	449	451	451	448	442	431	416	396	372	343	311	275	239	204	171	141	117	99
3800	42	46	432	437	441	443	44	439	43	421	405	384	359	331	298	265	231	199	169	143	123
3900	401	408	415	41	47	431	433	433	43	43	411	395	375	350	32	29	260	9	199	173	151
4000	380	388	396	404	411	417	42	45	425	422	415	404	388	368	344	318	89	26	231	05	181
4100	357	366	375	384	39	41	48	414	418	419	416	410	400	385	366	344	319	29	265	239	15
4200	333	343	35	36	372	38	392	400	408	413	415	414	409	400	386	369	348	325	30	274	249
4300	309	318	38	339	350	361	373	385	396	405	412	416	416	413	45	393	377	357	334	310	86
4400	284	94	304	315	327	34	353	367	381	394	406	415	421	43	41	415	403	388	368	346	322
4500	260	69	279	91	303	317	333	349	366	38	398	412	424	431	435	434	428	417	40	380	358

TI it1 th T bl q l oo

Appli d C t t + 300

Th t l ll p ltl

Th Eq tl fthi T bl t b dd dt th t f T bl IV

# SATELLITE III

## Approximate Tables of Conjunction

VI      Equation of Geocentric Conjunction      Arguments  $\beta, \gamma$       Oc., Tr.

$\beta$ $\gamma$	0 <sup>d</sup> 20 <sup>d</sup> 40 <sup>d</sup>	60 <sup>d</sup> 80 <sup>d</sup> 100 <sup>d</sup>	120 <sup>d</sup> 140 <sup>d</sup> 160 <sup>d</sup>	180 <sup>d</sup> 200 <sup>d</sup> 220 <sup>d</sup>	240 <sup>d</sup> 260 <sup>d</sup> 280 <sup>d</sup>	300 <sup>d</sup> 320 <sup>d</sup> 340 <sup>d</sup>	360 <sup>d</sup> 380 <sup>d</sup> 400 <sup>d</sup>
0 <sup>d</sup>	100 117 130	138 141 138	131 123 115	107 100 93	85 77 69	62 59 62	71 85 101
20	70 87 106	123 134 140	141 138 133	127 120 113	105 94 82	69 57 50	50 57 71
40	43 60 81	104 124 138	146 149 147	144 139 133	124 113 97	79 60 44	35 35 44
60	23 37 59	85 111 132	146 154 156	156 153 148	141 129 113	92 68 45	28 20 24
80	12 22 41	68 96 121	140 152 159	161 160 158	153 143 127	105 79 52	29 15 12
100	11 15 31	55 82 109	130 145 154	159 161 161	158 151 138	119 93 65	39 20 11
120	21 19 28	47 70 95	116 132 143	150 154 157	157 154 145	129 108 81	55 34 21
140	40 32 34	45 62 82	100 116 127	136 141 146	149 150 146	137 121 100	77 55 40
160	66 53 47	49 58 71	84 97 108	117 123 130	135 140 142	140 133 119	102 82 65
180	96 80 67	60 59 63	71 79 88	96 103 110	118 125 133	139 140 136	126 112 95
200	126 109 91	75 64 60	60 64 69	76 82 89	98 108 120	133 143 148	148 139 125
220	154 137 115	93 74 61	54 52 54	58 63 70	78 90 105	123 141 155	163 162 153
240	175 160 138	112 87 67	54 47 44	45 49 53	61 73 89	110 134 155	172 178 174
260	187 177 157	129 102 77	59 47 41	39 40 43	48 59 75	96 123 149	172 185 187
280	189 185 168	144 116 90	69 54 45	40 39 39	42 49 63	83 109 137	163 182 189
300	181 182 172	152 128 103	82 66 55	48 44 42	42 46 56	72 94 121	147 169 181
320	163 170 167	155 137 117	98 82 70	62 56 52	50 49 54	64 79 102	126 148 163
340	138 150 155	151 142 128	113 100 89	80 74 68	63 59 57	60 69 83	102 121 138
360	108 124 136	142 142 136	128 119 109	101 94 87	80 72 66	61 61 66	77 92 109
380	78 95 113	127 136 140	139 134 128	122 115 108	100 90 78	66 57 53	55 64 78
400	50 67 88	109 127 139	145 146 144	140 134 128	120 108 93	76 59 45	38 40 50

The unit in this Table is 0<sup>d</sup>000r.

Applied Constant: +0<sup>d</sup>0100.

The sign is positive.

The Equation of this Table to be added to that of Table IV.

# SATELLITE III

## Approximate Tables of Conjunction

### Equations of Conjunction

VII

$\delta$	Equation
<b>00</b>	d 0 00
<b>2</b>	22
<b>4</b>	5
<b>6</b>	7
<b>8</b>	9
<b>10</b>	31
<b>12</b>	0 003
<b>4</b>	33
<b>6</b>	34
<b>8</b>	34
<b>20</b>	34
<b>22</b>	0 0033
<b>4</b>	3
<b>6</b>	31
<b>8</b>	29
<b>30</b>	7
<b>32</b>	0 0025
<b>4</b>	22
<b>6</b>	0
<b>8</b>	18
<b>40</b>	15
<b>42</b>	0 0013
<b>4</b>	11
<b>6</b>	9
<b>8</b>	8
<b>50</b>	7
<b>52</b>	0 0006
<b>4</b>	6
<b>6</b>	6
<b>8</b>	7
<b>60</b>	8
<b>62</b>	0 0009
<b>4</b>	11
<b>6</b>	13
<b>8</b>	15
<b>70</b>	18
<b>72</b>	0 0020
<b>4</b>	3
<b>6</b>	25
<b>8</b>	27
<b>80</b>	29
<b>82</b>	0 0031
<b>4</b>	3
<b>6</b>	33
<b>8</b>	34
<b>90</b>	34
<b>92</b>	0 0034
<b>4</b>	33
<b>6</b>	32
<b>8</b>	31
<b>100</b>	0 00 9

C t t + ∞

VIII

$\epsilon$	Equation
<b>00</b>	d 0040
<b>2</b>	34
<b>4</b>	8
<b>6</b>	3
<b>8</b>	18
<b>10</b>	14
<b>12</b>	0 0011
<b>4</b>	8
<b>6</b>	7
<b>8</b>	6
<b>20</b>	7
<b>22</b>	0 008
<b>4</b>	11
<b>6</b>	14
<b>8</b>	19
<b>30</b>	24
<b>32</b>	0 00029
<b>4</b>	35
<b>6</b>	41
<b>8</b>	47
<b>40</b>	52
<b>42</b>	0 0057
<b>4</b>	6
<b>6</b>	67
<b>8</b>	70
<b>50</b>	7
<b>52</b>	0 0074
<b>4</b>	74
<b>6</b>	73
<b>8</b>	71
<b>60</b>	69
<b>62</b>	0 0065
<b>4</b>	61
<b>6</b>	56
<b>8</b>	51
<b>70</b>	45
<b>72</b>	0 0039
<b>4</b>	33
<b>6</b>	27
<b>8</b>	2
<b>80</b>	17
<b>82</b>	0 0013
<b>4</b>	10
<b>6</b>	8
<b>8</b>	6
<b>90</b>	6
<b>92</b>	0 0007
<b>4</b>	9
<b>6</b>	12
<b>8</b>	15
<b>100</b>	0 002

C t t + ∞4

IX

$\zeta$	Equation
<b>00</b>	0 002
<b>2</b>	18
<b>4</b>	15
<b>6</b>	13
<b>8</b>	11
<b>10</b>	9
<b>12</b>	0 0008
<b>4</b>	7
<b>6</b>	6
<b>8</b>	6
<b>20</b>	6
<b>22</b>	0 0007
<b>4</b>	8
<b>6</b>	9
<b>8</b>	11
<b>30</b>	13
<b>32</b>	0 0015
<b>4</b>	18
<b>6</b>	20
<b>8</b>	23
<b>40</b>	25
<b>42</b>	0 00 7
<b>4</b>	9
<b>6</b>	31
<b>8</b>	32
<b>50</b>	33
<b>52</b>	0 0034
<b>4</b>	34
<b>6</b>	34
<b>8</b>	33
<b>60</b>	32
<b>62</b>	0 0030
<b>4</b>	29
<b>6</b>	7
<b>8</b>	4
<b>70</b>	2
<b>72</b>	0 0019
<b>4</b>	17
<b>6</b>	15
<b>8</b>	13
<b>80</b>	11
<b>82</b>	0 0009
<b>4</b>	8
<b>6</b>	7
<b>8</b>	6
<b>90</b>	6
<b>92</b>	0 006
<b>4</b>	7
<b>6</b>	8
<b>8</b>	10
<b>100</b>	0 0012

C t t + ∞

X

$\eta$	Equation
<b>00</b>	d 0 00 0
<b>2</b>	23
<b>4</b>	5
<b>6</b>	7
<b>8</b>	28
<b>10</b>	8
<b>12</b>	0 00 7
<b>4</b>	25
<b>6</b>	3
<b>8</b>	20
<b>20</b>	17
<b>22</b>	0 0015
<b>4</b>	13
<b>6</b>	1
<b>8</b>	12
<b>30</b>	13
<b>32</b>	0 0015
<b>4</b>	18
<b>6</b>	20
<b>8</b>	23
<b>40</b>	25
<b>42</b>	0 0027
<b>4</b>	28
<b>6</b>	28
<b>8</b>	27
<b>50</b>	25
<b>52</b>	0 0022
<b>4</b>	20
<b>6</b>	17
<b>8</b>	15
<b>60</b>	13
<b>62</b>	0 0012
<b>4</b>	1
<b>6</b>	13
<b>8</b>	15
<b>70</b>	18
<b>72</b>	0 0021
<b>4</b>	23
<b>6</b>	25
<b>8</b>	27
<b>80</b>	28
<b>82</b>	0 0028
<b>4</b>	27
<b>6</b>	25
<b>8</b>	22
<b>90</b>	19
<b>92</b>	0 0016
<b>4</b>	14
<b>6</b>	13
<b>8</b>	12
<b>100</b>	0 0012

C ta t + ∞





# SATELLITE III



## Tables

of

Longitude on Jupiter's Orbit,  
Variation of the Radius Vector,  
and Latitude

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### XI Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10	11	12	13
Date	Mean Long.	A	B	C	D	E	F	G	H	I	J	K
1850°0	346°69972	d 5°61104	d 7°110	d 5°78	d 2°6522	d 1°9589	d 1°54	d 2°21	d 4°83	d 43°22	d 224	d 451°85
1851°0	352°64062	3°96283	8°935	5°55	2°7199	2°0632	5°17	5°81	3°79	6°95	188	359°18
*1852°0	358°58151	2°31462	10°761	5°33	2°7875	2°1675	1°86	2°46	2°75	20°85	151	266°50
1853°0	54°84005	1°66641	1°064	6°11	3°8552	3°2718	6°49	0°10	2°71	35°74	116	174°83
1854°0	60°78095	0°01819	2°890	5°88	3°9228	3°3761	3°18	3°70	1°67	49°63	80	82°15
1855°0	66°72185	5°42091	4°715	5°66	3°9905	3°4804	6°81	0°35	0°63	13°37	44	447°15
*1856°0	72°66274	3°77270	6°541	5°44	4°0581	3°5847	3°50	3°95	6°77	27°26	8	354°48
1857°0	128°92128	3°12449	9°367	6°21	5°1258	4°6890	1°18	1°60	6°72	42°16	374	262°80
1858°0	134°86218	1°47628	11°193	5°99	5°1935	4°7934	4°82	5°20	5°68	5°90	338	170°13
1859°0	140°80308	6°87900	0°495	5°77	5°2611	4°8977	1°50	1°85	4°64	19°79	302	77°45
*1860°0	146°74397	5°23078	2°321	5°54	5°3288	5°0020	5°14	5°45	3°60	33°68	265	442°45
1861°0	203°00251	4°58257	5°147	6°31	6°3964	6°1063	2°82	3°10	3°56	48°58	230	350°78
1862°0	208°94341	2°93436	6°973	6°09	6°4641	6°2106	6°46	6°70	2°52	12°31	194	258°10
1863°0	214°88431	1°28615	8°799	5°87	6°5317	6°3149	3°14	3°35	1°48	26°21	158	165°43
*1864°0	220°82520	6°68887	10°624	5°65	6°5994	6°4192	6°78	0°00	0°44	40°10	122	72°75
1865°0	277°08374	6°04066	0°927	6°42	0°5115	0°3687	4°46	4°60	0°40	4°84	87	438°75
1866°0	283°02464	4°39245	2°753	6°20	0°5791	0°4730	1°15	1°25	6°53	18°73	50	346°08
1867°0	288°96554	2°74424	4°579	5°98	0°6468	0°5773	4°78	4°85	5°49	32°63	14	253°40
*1868°0	294°90643	1°09603	6°404	5°75	0°7144	0°6816	1°47	1°50	4°45	46°52	379	160°73
1869°0	351°16497	0°44782	9°230	6°53	1°7821	1°7859	6°10	6°10	4°41	11°26	344	69°06
1870°0	357°10587	5°85053	11°056	6°30	1°8498	1°8902	2°79	2°75	3°37	25°15	308	434°06
1871°0	3°04676	4°20232	0°359	6°08	1°9174	1°9945	6°42	6°35	2°33	39°05	272	341°38
*1872°0	8°98766	2°55411	2°184	5°86	1°9851	2°0988	3°11	2°99	1°29	2°78	236	248°71
1873°0	65°24620	1°90590	5°010	6°63	3°0527	3°2032	0°79	0°64	1°25	17°68	200	157°03
1874°0	71°18710	0°25769	6°836	6°41	3°1204	3°3075	4°43	4°24	0°21	31°57	164	64°36
1875°0	77°12799	5°66041	8°662	6°19	3°1880	3°4118	1°11	0°89	6°34	45°47	128	429°36
*1876°0	83°06889	4°01219	10°488	5°96	3°2557	3°5161	4°75	4°49	5°30	9°20	92	336°68
1877°0	139°32743	3°36398	0°790	6°74	4°3233	4°6204	2°43	2°14	5°26	24°10	57	245°01
1878°0	145°26833	1°71577	2°616	6°51	4°3910	4°7247	6°07	5°74	4°22	37°99	21	152°33
1879°0	151°20922	0°06756	4°442	6°29	4°4586	4°8290	2°75	2°39	3°18	1°73	386	59°66
*1880°0	157°15012	5°47028	6°268	6°07	4°5263	4°9333	6°39	5°99	2°14	15°62	350	424°66
1881°0	213°40866	4°82207	9°093	6°84	5°5939	6°0376	4°07	3°64	2°10	30°51	314	332°98
1882°0	219°34956	3°17386	10°919	6°62	5°6616	6°1419	0°76	0°29	1°06	44°41	278	240°31
1883°0	225°29045	1°52565	0°222	6°39	5°7292	6°2462	4°39	3°89	0°02	8°15	242	147°63
*1884°0	231°23135	6°92836	2°048	6°17	5°7969	6°3505	1°08	0°54	6°15	22°04	206	54°96
1885°0	287°48989	6°28015	4°873	6°95	6°8645	0°3000	5°71	5°14	6°11	36°93	171	420°96
1886°0	293°43079	4°63194	6°699	6°72	6°9322	0°4043	2°40	1°79	5°07	0°67	135	328°28
1887°0	299°37168	2°98373	8°525	6°50	6°9998	0°5086	6°03	5°39	4°03	14°56	98	235°61
*1888°0	305°31258	1°33552	10°351	6°28	7°0675	0°6130	2°72	2°04	2°99	28°46	62	142°93
1889°0	1°57112	0°68731	0°653	7°05	0°9796	1°7173	0°40	6°64	2°95	43°35	27	51°26
1890°0	7°51202	6°09003	2°479	6°83	1°0473	1°8216	4°04	3°29	1°91	7°09	392	416°26
1891°0	13°45291	4°44182	4°305	6°60	1°1149	1°9259	0°72	6°88	0°87	20°98	356	323°58
*1892°0	19°39381	2°79360	6°131	6°38	1°1826	2°0302	4°36	3°53	7°01	34°88	320	230°91
1893°0	75°65235	2°14539	8°957	0°00	2°2502	3°1345	2°04	1°18	6°96	49°77	285	139°23
1894°0	81°59325	0°49718	10°782	6°93	2°3179	3°2388	5°68	4°78	5°92	13°51	249	46°56
1895°0	87°53414	5°89990	0°085	6°71	2°3855	3°3431	2°36	1°43	4°88	27°40	212	411°56
*1896°0	93°47504	4°25169	1°911	6°49	2°4532	3°4474	6°00	5°03	3°84	41°30	176	318°88
1897°0	149°73358	3°60348	4°737	0°10	3°5208	4°5517	3°68	2°68	3°80	6°03	141	227°21
1898°0	155°67448	1°95527	6°562	7°04	3°5885	4°6560	0°37	6°28	2°76	19°93	105	134°53
1899°0	161°61537	0°30706	8°388	6°81	3°6561	4°7603	4°00	2°93	1°72	33°82	69	41°86
1900°0	167°55628	5°70977	10°214	6°59	3°7238	4°8646	0°69	6°53	0°68	47°72	33	406°86
Periods	...	7°05093	12°523	7°16	7°1555	7°1548	6°95	6°95	7°18	50°16	401	457°67

Constant applied to entries in Column 2:  $-0^{\circ}.47000$ .

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### XI Values at Epoch of Mean Longitude and the Arguments

4	5	6	7	8	9				3	4	5
L	M		N	O	P	Q	R	S	T	U	V
05 04	53 48	1785 1	1850 0	0 63 48	10	889	3 38	<sup>d</sup> 5 1475	<sup>d</sup> 3 57	6 117	<sup>d</sup> 7 0
87 74	132 89	15	1851 0	0 749 9	34	3 033	3 50	5 3161	3 9	6 48	5 9
45 74	1 30	515 4	1852 0	86710	2 57	3 176	0 05	5 4848	4 8	6 379	4 8
336 44	378 3	881 5	1853 0	1 9849	0 3	0 74	1 18	6 6534	5 63	0 355	4 7
19 14	57 71	3 46 5	1854 0	1 271	0 47	0 885	1 30	6 8 1	5 99	0 486	3 6
101 83	137 1	3611 7	1855 0	2 2 5	71	1 0 9	1 4	6 9907	6 34	0 617	5
466 83	16 53	3976 4	*1856 0	33833	94	1 17	1 55	0 0 58	6 70	0 748	1 4
350 53	38 53	9 7	1857 0	3 45613	2 18	2 315	2 67	1 1745	0 90	1 878	1 3
33 3	61 95	374 6	1858 0	3 57394	2 41	2 458	80	1 343	1 26	0 9	0 2
115 93	141 35	739 6	1859 0	3 69175	65	601	9	1 5118	1 61	2 140	6 3
480 93	0 76	1104 7	1860 0	3 8 956	2 89	2 745	3 05	1 6805	1 97	2 71	5 2
364 63	386 76	147 9	1861 0	4 9 736	0 55	0 311	59	8491	3 3	3 402	5 1
247 33	66 17	1836	1862 0	5 4517	0 78	0 454	0 72	3 0178	3 68	3 532	4 0
13	145 58	1	1863 0	5 16 98	1 02	0 597	0 84	3 1865	4 03	3 663	2 9
7	4 99	566	1864 0	5 8079	1 6	0 741	96	3 3551	4 39	3 714	1 8
378 72	390 99	931 3	1865 0	6 39859	2 49	1 884	2 09	4 5238	5 74	4 9 5	1 8
61 42	270 40	3 95 8	1866 0	6 51640	2 73	2 027	2 1	4 6924	6 10	5 055	0 7
144 1	149 81	3659 9	1867 0	6 634 1	97	170	2 34	4 8611	6 45	5 186	6 7
6 8	9 22	4024 7	*1868 0	6 75 02	3 0	2 314	46	5 0297	6 81	5 317	5 7
39 82	395 22	58 1	1869 0	715 7	0 86	3 457	0 1	6 1984	1 01	6 448	5 6
275 51	74 63	423 5	1870 0	0 83308	1 10	0 0 3	0 13	6 3671	1 37	6 579	4 5
158 21	154 4	789 2	1871 0	0 95089	1 34	0 166	0 6	6 5357	1 72	6 7 9	3 4
4 91	33 45	1155 0	1872 0	1 6869	1 57	0 309	0 38	6 7044	2 08	6 840	2 3
4 6 91	399 45	15 1 6	1873 0	18650	2 81	1 453	1 51	0 7195	3 43	0 817	2 2
89 61	78 86	1886 9	1874 0	30431	3 05	1 596	1 63	0 8881	3 79	0 948	1 1
17 31	158 27	2251 8	1875 0	4 21	3 28	1 739	1 75	1 0568	4 14	1 078	0 0
55 00	37 68	2616	1876 0	2 5399	3 5	1 88	1 88	1 2 55	4 50	1 209	6 1
4 1 00	403 68	981 5	1877 0	3 65773	1 18	3 0 6	3 00	3941	5 85	2 340	6 0
303 70	83 09	3345 8	1878 0	3 77554	1 4	3 169	3 13	2 5628	6 1	2 471	4 9
186 40	16 51	3710 2	1879 0	3 89335	1 65	3 312	3 25	2 7314	6 56	2 602	3 8
69 10	41 9	4075 1	*1880 0	4 1115	1 89	3 455	3 38	2 9001	6 92	2 732	2 7
435 10	407 9	108 8	1881 0	5 12896	3 13	1 0 2	0 92	4 0687	1 12	3 863	2 6
3 7 80	287 33	474 4	1882 0	5 4677	3 36	1 165	1 05	4 374	1 48	3 994	1 5
200 49	166 74	84 0	1883 0	5 36458	02	1 308	1 17	4 4061	1 83	4 1 4	0 4
83 19	46 15	1 5 4	1884 0	5 48 38	0 6	1 451	1 30	4 5747	2 19	4 256	6 5
449 19	41 15	1571 5	1885 0	6 60019	1 50	595	4	5 7434	3 54	5 386	6 4
331 89	91 56	1936 3	1886 0	6 71800	1 73	2 738	54	5 9120	3 90	5 517	5 3
214 59	170 97	300 9	1887 0	6 83581	1 97	881	67	6 0807	4 5	5 648	4
97 9	50 38	665 5	1888 0	6 95361		3 024	2 79	6 494	4 61	5 779	3 1
463 9	416 38	3 31	1889 0	0 91687	3 44	0 590	0 34	0 645	5 96	6 910	3 0
345 99	295 79	3396 1	1890 0	1 03467	1	0 733	0 46	0 4331	6 32	7 040	2 0
8 68	175 20	3761 4	1891 0	1 15 48	0 34	0 877	0 59	6018	6 67	0 017	0 9
111 38	54 61	4126 8	1892 0	1 7029	0 57	1 0 0	0 71	0 77 4	7 0	0 148	6 9
477 38	4 0 61	160 6	1893 0	38810	1 81	163	1 84	1 9391	1 23	1 78	6 9
36 8	3 0	5 6 0	1894 0	5 590	05	2 307	1 96	1078	1 59	1 4 9	5 8
4 78	179 43	891	1895 0	2 62371	2 8	2 45	2 09	2764	1 94	1 540	4 7
1 5 48	58 84	1 56 1	*1896 0	7415	5	2 593	1	2 4451	30	1 671	3 6
9 17	4 4 84	16 1 9	1897 0	3 85933	0 18	0 159	3 33	3 6137	3 65	2 802	3 5
374 17	304 25	1986 5	1898 0	3 97713	0 4	0 3 3	3 46	3 78 4	4 01	2 932	2 4
56 87	183 66	351 2	1899 0	4 09494	0 65	0 446	01	3 9510	4 36	3 063	1 3
139 57	63 07	716 0	1900 0	4 1 75	0 89	0 589	0 13	4 1197	4 7	3 194	0 2
48 30	485 59	4332 6	P 10ds	7 15455	3 58	3 577	3 58	7 1536	7 15	7 154	7 2

T bt th Tu L git d l dt J pit O bit th ti fCl m m tb ppl m t d by th q tl f T bl XII XXVII

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XI continued Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10	11	12	13
Date	Mean Long.	A	B	C	D	E	F	G	H	I	J	K
	°	d	d	d	d	d	d	d	d	d	d	d
1900·0	167°55628	5°70977	10°214	6°59	3°7238	4°8646	0°69	6°53	0°68	47°72	33	406°86
1901·0	173°49718	4°06156	12°040	6°37	3°7915	4°9690	4°32	3°18	6°81	11°45	398	314°19
1902·0	179°43807	2°41335	1°342	6°14	3°8591	5°0733	1°01	6°78	5°77	25°35	361	221°51
1903·0	185°37897	0°76514	3°168	5°92	3°9268	5°1776	4°64	3°43	4°73	39°24	325	128°84
*1904·0	191°31986	6°16786	4°994	5°69	3°9944	5°2819	1°33	0°08	3°69	2°98	289	36°16
1905·0	247°57841	5°51965	7°820	6°47	5°0621	6°3862	5°96	4°68	3°65	17°87	254	402°16
1906·0	253°51930	3°87144	9°646	6°25	5°1297	6°4905	2°65	1°33	2°61	31°76	218	309°49
1907·0	259°46020	2°22323	11°471	6°02	5°1974	6°5948	6°28	4°93	1°57	45°66	182	216°81
*1908·0	265°40109	0°57501	0°774	5°80	5°2650	6°6991	2°97	1°58	0°53	9°40	145	124°14
1909·0	321°65964	6°97773	3°600	6°58	6°3327	0°6486	0°66	6°18	0°49	24°29	110	32°46
1910·0	327°60053	5°32952	5°426	6°35	6°4003	0°7529	4°29	2°82	6°62	38°18	74	397°46
1911·0	333°54143	3°68131	7°251	6°13	6°4680	0°8572	0°98	6°42	5°58	1°92	38	304°78
*1912·0	339°48232	2°03310	9°077	5°90	6°5356	0°9615	4°61	3°07	4°54	15°81	2	212°11
1913·0	35°74087	1°38489	11°903	6°68	0°4478	2°0658	2°30	0°72	4°50	30°71	368	120°44
1914·0	41°68176	6°78760	1°206	6°46	0°5154	2°1701	5°93	4°32	3°46	44°60	332	27°76
1915·0	47°62266	5°13939	3°031	6°23	0°5831	2°2744	2°62	0°97	2°42	8°34	296	392°76
*1916·0	53°56355	3°49118	4°857	6°01	0°6507	2°3788	6°25	4°57	1°38	22°23	259	300°09
1917·0	109°82210	2°84297	7°683	6°79	1°7184	3°4831	3°94	2°22	1°34	37°13	224	208°41
1918·0	115°76299	1°19476	9°509	6°56	1°7860	3°5874	0°62	5°82	0°30	0°86	188	115°74
1919·0	121°70389	6°59748	11°335	6°34	1°8537	3°6917	4°26	2°47	6°43	14°76	152	23°06
*1920·0	127°64478	4°94927	0°637	6°11	1°9213	3°7960	0°94	6°07	5°39	28°65	116	388°06
1921·0	183°90332	4°30106	3°463	6°89	2°9890	4°9003	5°58	3°72	5°35	43°55	81	296°39
1922·0	189°84422	2°65285	5°289	6°67	3°0566	5°0046	2°26	0°37	4°31	7°28	44	203°71
1923·0	195°78512	1°00464	7°115	6°44	3°1243	5°1089	5°90	3°97	3°27	21°18	8	111°04
*1924·0	201°72601	6°40735	8°940	6°22	3°1919	5°2132	2°58	0°62	2°23	35°07	373	18°36
1925·0	257°98455	5°75914	11°766	7°00	4°2596	6°3175	0°27	5°22	2°19	49°97	338	384°36
1926·0	263°92545	4°11093	1°069	6°77	4°3272	6°4218	3°90	1°87	1°15	13°70	302	291°69
1927·0	269°86635	2°46272	2°895	6°55	4°3949	6°5261	0°59	5°47	0°11	27°60	266	199°01
*1928·0	275°80724	0°81451	4°720	6°32	4°4625	6°6304	4°22	2°12	6°24	41°49	230	106°34
1929·0	332°06578	0°16630	7°546	7°10	5°5302	0°5799	1°91	6°71	6°20	6°23	194	14°66
1930·0	338°00668	5°56901	9°372	6°88	5°5978	0°6842	5°54	3°36	5°16	20°12	158	379°66
1931·0	343°94758	3°92080	11°198	6°65	5°6655	0°7886	2°23	0°01	4°12	34°02	122	286°99
*1932·0	349°88847	2°27259	0°500	6°43	5°7332	0°8929	5°86	3°61	3°08	47°91	86	194°32
1933·0	46°14701	1°62438	3°326	0°04	6°8008	1°9972	3°55	1°26	3°04	12°65	51	102°64
1934·0	52°08791	7°02710	5°152	6°98	6°8685	2°1015	0°23	4°86	2°00	26°54	15	9°97
1935·0	58°02881	5°37889	6°978	6°76	6°9361	2°2058	3°87	1°51	0°96	40°43	380	374°97
*1936·0	63°96970	3°73068	8°804	6°53	7°0038	2°3101	0°55	5°11	7°10	4°17	344	282°29
1937·0	120°22824	3°08247	11°629	0°15	0°9159	3°4144	5°19	2°76	7°05	19°06	308	190°62
1938·0	126°16914	1°43426	0°932	7°09	0°9835	3°5187	1°87	6°36	6°01	32°96	272	97°94
1939·0	132°11004	6°83697	2°758	6°86	1°0512	3°6230	5°51	3°01	4°97	46°85	236	5°27
*1940·0	138°05093	5°18876	4°584	6°64	1°1188	3°7273	2°19	6°61	3°93	10°59	200	370°27
1941·0	194°30947	4°54055	7°409	0°25	2°1865	4°8316	6°82	4°26	3°89	25°48	165	278°59
1942·0	200°25037	2°89234	9°235	0°03	2°2541	4°9359	3°51	0°91	2°85	39°37	129	185°92
1943·0	206°19127	1°24413	11°061	6°97	2°3218	5°0402	0°20	4°51	1°81	3°11	92	93°24
*1944·0	212°13216	6°64685	0°364	6°74	2°3895	5°1446	3°83	1°16	0°77	17°01	56	0°57
1945·0	268°39070	5°99864	3°189	0°36	3°4571	6°2489	1°52	5°76	0°73	31°90	21	366°57
1946·0	274°33159	4°35042	5°015	0°14	3°5248	6°3532	5°15	2°41	6°86	45°80	386	273°89
1947·0	280°27250	2°70221	6°841	7°07	3°5924	6°4575	1°84	6°01	5°82	9°53	350	181°22
*1948·0	286°21339	1°05400	8°667	6°85	3°6601	6°5618	5°47	2°65	4°78	23°43	314	88°54
1949·0	342°47193	0°40579	11°493	0°46	4°7277	0°5113	3°16	0°30	4°74	38°32	279	454°54
1950·0	348°41283	5°80851	0°795	0°24	4°7954	0°6156	6°79	3°90	3°70	2°06	243	361°87
Periods	...	7°05093	12°523	7°16	7°1555	7°1548	6°95	6°95	7°18	50°16	401	457°67

Constant applied to entries in Column 2: -0°47000.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XI continued Values at Epoch of Mean Longitude and the Arguments

4	5	6	7	8	9				3	4	5
L	M	$\alpha$	N	O	P	Q	R	S	T	U	V
d 139 57	63 7	716	1900 O	4 1 75	d 0 89	0 589	0 13	d 4 1197	d 4 72	d 3 194	d 0 2
7	4 8 07	308 1	1901 O	4 33 56	1 13	73	0 25	4 2884	5 08	3 325	6 3
387 7	307 48	3446 4	1902 O	4 44837	1 36	875	38	4 457	5 43	3 456	5 2
69 97	186 89	3811 6	1903 O	4 56617	1 60	1 019	0 50	4 6 57	5 79	3 586	4 1
15 66	66 3	4176 6	1904 O	4 68398	1 84	1 16	0 63	4 7943	6 14	3 717	3
36 36	432 3	209 9	1905 O	5 8 179	3 7	2 305	1 75	5 963	0 35	4 848	9
401 36	311 71	574 7	1906 O	5 9196	3 31	2 448	1 88	6 1316	0 70	4 979	1 8
84 06	191 12	939 5	1907 O	6 03740	3 55	592	2 00	6 30 3	1 06	5 110	0 7
166 76	7 53	13 4 4	*1908 O	6 155 1	1	2 735	12	6 4690	1 41	5 240	6 8
50 46	436 53	167 4	1909 O	0 11846	1 44	0 301	3 25	0 4841	2 77	6 371	6 7
415 46	315 94	35 4	1910 O	3627	1 68	0 444	3 37	0 6527	3 12	6 502	5 6
298 15	195 35	4 0 6	1911 O	0 35408	1 92	0 588	3 50	0 8 14	3 48	6 633	4 5
18 85	74 76	765 7	1912 O	0 47189	15	0 731	0 04	0 9900	3 83	6 764	3 4
64 55	440 76	3131 8	1913 O	1 58969	3 39	1 874	1 17	2 1587	5 1	0 740	3 3
4 9 55	32 17	3496 8	1914 O	1 7075	0 5	0 17	1 29	3 74	5 54	0 871	3
31 25	199 58	3861 6	1915 O	1 82531	0 8	2 161	1 42	4960	5 90	1 00	1 2
194 95	78 99	4 6 4	*1916 O	1 9431	0 5	2 304	1 54	2 6647	6 25	1 132	0 1
78 65	444 99	59 5	1917 O	3 609	1 76	3 447	67	3 8333	0 46	2 63	7 1
443 65	324 40	6 4 5	1918 O	3 17873	1 99	0 013	79	4 0020	0 81	2 394	6 1
3 6 34	3 81	989 6	1919 O	3 29654	2 23	0 156	2 91	4 1707	1 17	2 5 5	5 0
09 04	83 2	1354 8	1920 O	3 41435	47	0 300	3 04	4 3393	1 52	2 656	3 9
9 74	449	1721 1	1921 O	4 53215	0 13	1 443	0 59	5 5080	2 88	3 786	3 8
457 74	3 8 63	86 5	1922 O	4 64996	0 36	1 586	0 71	5 6766	3 23	3 917	2 7
340 44	08 05	451 1	1923 O	4 76777	0 60	1 7 9	0 83	5 8453	3 59	4 048	1 6
2 3 14	87 46	816 0	*1924 O	4 88558	84	1 873	0 96	6 0139	3 94	4 179	0 5
106 83	453 46	3181 3	1925 O	6 0 338	7	3 016	2 8	0 0 90	5 30	5 310	0 4
471 83	33 87	3545 5	1926 O	6 1 119	31	3 159	21	0 1977	5 65	5 44	6 5
354 53	21 8	3909 8	1927 O	6 390	2 55	3 302	33	0 3664	6 01	5 571	5 4
37 3	91 69	4 74 5	*1928 O	6 35681	78	3 446	2 46	5350	6 36	5 702	4 3
1 0 93	457 69	3 8 0	1929 O	0 3 0 6	0 44	1 01	0 00	1 7037	0 57	6 833	4 2
3 63	337 10	673 6	1930 O	0 43787	0 68	1 155	0 13	1 8723	0 92	6 964	3 1
368 63	16 51	1039 3	1931 O	0 55568	0 92	1 298	0 25	0410	1 28	7 094	2 0
51 3	95 9	14 5 0	*1932 O	0 67348	1 15	1 441	38	2 2097	1 63	0 071	0 9
135 0	461 9	1771 6	1933 O	1 791 9	2 39	2 585	1 50	3 3783	2 99	1 202	0 8
17 7	341 33	2136 8	1934 O	1 9 910	63	728	1 62	3 5470	3 34	1 333	6 9
38 7	74	501 6	1935 O	2691	86	2 871	1 75	3 7156	3 70	1 463	5 8
65 4	1 0 15	2866 0	1936 O	14471	3 1	3 014	1 87	3 8843	4 05	1 594	4 7
149 1	466 15	3231	1937 O	3 625	76	0 581	3 00	5 05 9	5 41	2 725	4 6
3 81	345 56	3595 4	1938 O	3 38033	1 0	7 4	3 1	5 16	5 76	2 856	3 5
396 81	4 97	396 0	1939 O	3 49814	1 3	0 867	3 5	5 3903	6 12	2 986	2 5
279 51	104 38	4324 9	*1940 O	3 61594	1 47	1 010	3 37	5 5 89	6 47	3 117	1 4
163 1	47 38	358 7	1941 O	4 73375	7	154	0 9	6 7276	68	4 48	1 3
45 91	349 79	7 4 3	1942 O	4 85156	2 94	297	1 4	6 8962	1 3	4 379	0 2
41 91	9	1089 8	1943 O	4 96937	3 18	440	1 16	7 0649	1 39	4 510	6 3
93 61	108 61	1455 1	1944 O	5 08717	3 41	2 583	1 29	0 800	1 74	4 640	5 2
177 31	474 61	1821 1	1945 O	6 498	1 07	0 149	2 41	1 487	3 10	5 771	5 1
6 0	354 01	185 9	1946 O	6 32278	1 31	0 93	2 54	1 4173	3 45	5 902	4 0
425 00	33 43	550 5	1947 O	6 44060	1 55	0 436	2 66	1 586	3 81	6 033	9
307 70	11 84	915	*1948 O	6 5584	1 78	0 579	2 79	1 7546	4 16	6 164	1 8
191 40	478 84	3 81	1949 O	52166	3 0	1 7	0 33	9 33	5 52	0 140	1 7
74 1	358 5	3646	1950 O	0 63947	3 6	1 866	0 46	3 0919	5 87	0 71	0 6
48 3	485 59	433 6	P ods	7 15455	3 58	3 577	3 58	7 1536	7 15	7 154	7 2

T bt tl T L git d d dt J pit O bt th ti f Cl m m tb ppl m t d by tl q ti f T bl XII XXXII

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XI continued Values at Epoch of Mean Longitude and the Arguments

1	2	3	4	5	6	7	8	9	10	11	12	13
Date	Mean Long.	A	B	C	D	E	F	G	H	I	J	K
	°	d	d	d	d	d	d	d	d	d	d	d
1950·0	348·41283	5·80851	0·795	0·24	4·7954	0·6156	6·79	3·90	3·70	2·06	243	361·87
1951·0	354·35373	4·16030	2·621	0·02	4·8630	0·7199	3·48	0·55	2·66	15·95	206	269·19
*1952·0	0·29462	2·51209	4·447	6·95	4·9307	0·8242	0·16	4·15	1·62	29·85	170	176·52
1953·0	56·55316	1·86388	7·273	0·57	5·9983	1·9285	4·80	1·80	1·58	44·74	135	84·84
1954·0	62·49406	0·21567	9·098	0·34	6·0660	2·0328	1·48	5·40	0·54	8·48	99	449·84
1955·0	68·43496	5·61838	10·924	0·12	6·1336	2·1371	5·12	2·05	6·67	22·37	63	357·17
*1956·0	74·37585	3·97017	0·227	7·06	6·2013	2·2414	1·80	5·65	5·63	36·27	27	264·49
1957·0	130·63439	3·32196	3·053	0·67	0·1134	3·3457	6·44	3·30	5·59	1·00	393	172·82
1958·0	136·57529	1·67375	4·878	0·45	0·1811	3·4500	3·12	6·90	4·55	14·90	356	80·14
1959·0	142·51618	0·02554	6·704	0·22	0·2487	3·5544	6·76	3·55	3·51	28·79	320	445·14
*1960·0	148·45708	5·42826	8·530	0·00	0·3164	3·6587	3·44	0·20	2·47	42·68	284	352·47
1961·0	204·71562	4·78005	11·356	0·78	1·3840	4·7630	1·13	4·80	2·43	7·42	249	260·79
1962·0	210·65652	3·13183	0·658	0·55	1·4517	4·8673	4·76	1·45	1·39	21·31	213	168·12
1963·0	216·59741	1·48362	2·484	0·33	1·5193	4·9716	1·45	5·05	0·35	35·21	177	75·45
*1964·0	222·53831	6·88634	4·310	0·11	1·5870	5·0759	5·08	1·70	6·48	49·10	140	440·45
1965·0	278·79685	6·23813	7·136	0·88	2·6546	6·1802	2·77	6·30	6·44	13·84	105	348·77
1966·0	284·73775	4·58992	8·962	0·66	2·7223	6·2845	6·40	2·95	5·40	27·73	69	256·10
1967·0	290·67864	2·94171	10·787	0·43	2·7899	6·3888	3·09	6·54	4·36	41·63	33	163·42
*1968·0	296·61954	1·29350	0·090	0·21	2·8576	6·4931	6·72	3·19	3·32	5·36	398	70·75
1969·0	352·87808	0·64529	2·916	0·99	3·9252	0·4426	4·41	0·84	3·28	20·26	363	436·75
1970·0	358·81898	6·04800	4·742	0·76	3·9929	0·5469	1·09	4·44	2·24	34·15	327	344·07
1971·0	4·75987	4·39979	6·567	0·54	4·0605	0·6512	4·73	1·09	1·20	48·05	291	251·40
*1972·0	10·70077	2·75158	8·393	0·32	4·1282	0·7555	2·41	4·69	0·16	11·78	254	158·72
1973·0	66·95931	2·10337	11·219	1·09	5·1958	1·8598	6·05	2·34	0·12	26·68	219	67·05
1974·0	72·90021	0·45516	0·522	0·87	5·2635	1·9641	2·73	5·94	6·25	40·57	183	432·05
1975·0	78·84110	5·85788	2·347	0·64	5·3312	2·0685	6·37	2·59	5·21	4·31	147	339·37
*1976·0	84·78200	4·20967	4·173	0·41	5·3988	2·1728	3·05	6·19	4·17	18·20	111	246·70
1977·0	141·04054	3·56146	6·999	1·20	6·4665	3·2771	0·74	3·84	4·13	33·10	76	155·02
1978·0	146·98144	1·91324	8·825	0·97	6·5341	3·3814	4·37	0·49	3·09	46·99	39	62·35
1979·0	152·92233	0·26503	10·651	0·75	6·6018	3·4857	1·06	4·09	2·05	10·73	3	422·35
*1980·0	158·86323	5·66775	12·476	0·52	6·6694	3·5900	4·69	0·74	1·01	24·62	368	334·67
1981·0	215·12177	5·01954	2·779	1·30	0·5815	4·6943	2·38	5·34	0·97	39·52	333	243·00
1982·0	221·06267	3·37133	4·605	1·08	0·6492	4·7986	6·01	1·99	7·10	3·25	297	150·32
1983·0	227·00356	1·72312	6·431	0·85	0·7168	4·9029	2·70	5·59	6·06	17·15	261	57·65
*1984·0	232·94446	0·07491	8·256	0·63	0·7845	5·0072	6·33	2·24	5·02	31·04	225	422·65
1985·0	289·20300	6·47762	11·082	1·41	1·8521	6·1115	4·02	6·84	4·98	45·93	189	330·97
1986·0	295·14390	4·82941	0·385	1·18	1·9198	6·2158	0·70	3·49	3·94	9·67	153	238·30
1987·0	301·08479	3·18120	2·211	0·96	1·9874	6·3202	4·34	0·13	2·90	23·57	117	145·62
*1988·0	307·02569	1·53299	4·036	0·73	2·0551	6·4245	1·02	3·73	1·86	37·46	81	52·95
1989·0	3·28423	0·88478	6·862	1·51	3·1228	0·3739	5·66	1·38	1·82	2·20	46	418·95
1990·0	9·22513	6·28750	8·688	1·29	3·1904	0·4783	2·34	4·98	0·78	16·09	10	326·27
1991·0	15·16602	4·63929	10·514	1·06	3·2581	0·5826	5·98	1·63	6·91	29·98	375	233·60
*1992·0	21·10692	2·99108	12·340	0·84	3·3257	0·6869	2·66	5·23	5·87	43·88	339	140·92
1993·0	77·36546	2·34287	2·642	1·61	4·3934	1·7912	0·35	2·88	5·83	8·61	303	49·25
1994·0	83·30636	0·69465	4·468	1·39	4·4610	1·8955	3·98	6·48	4·79	22·51	267	414·25
1995·0	89·24725	6·09737	6·294	1·17	4·5287	1·9998	0·67	3·13	3·75	36·40	231	321·58
*1996·0	95·18815	4·44916	8·120	0·94	4·5963	2·1041	4·30	6·73	2·71	0·14	195	228·90
1997·0	151·44669	3·80095	10·945	1·72	5·6640	3·2084	1·99	4·38	2·67	15·03	160	137·23
1998·0	157·38759	2·15274	0·248	1·50	5·7316	3·3127	5·62	1·03	1·63	28·93	124	44·55
1999·0	163·32848	0·50453	2·074	1·27	5·7993	3·4170	2·31	4·63	0·59	42·82	87	409·55
*2000·0	169·26939	5·90724	3·900	1·05	5·8669	3·5213	5·94	1·28	6·72	6·56	51	316·88
Periods	...	7·05093	12·523	7·16	7·1555	7·1548	6·95	6·95	7·18	50·16	401	457·67

Constant applied to entries in Column 2:  $-0^{\circ}.47000$ .

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XI continued Values at Epoch of Mean Longitude and the Arguments

4	5	6	7	8	9				3	4	5
L	M	a	N	O	P	Q	R	S	T	U	V
d 74 10	358 5	3646 0	1950 0	d 0 63947	d 3 6	1 866	0 46	3 0919	5 87	0 71	0 6
439 10	37 66	4 11 3	1951 0	0 757 7	3 49	0 09	58	3 606	6 23	0 40	6 7
3 1 80	117 7	44 0	1952 0	87508	0 15	2 15	0 71	3 4 93	6 58	0 533	5 6
205 49	483 07	410 4	1953 0	1 99 89	1 39	3 95	1 83	4 5979	0 79	1 663	5 5
88 19	36 48	775 6	1954 0	11070	1 63	3 439	1 95	4 7666	1 14	1 794	4 4
453 19	41 89	1140 7	1955 0	850	1 86	0 005	2 08	3 9352	1 50	1 925	3 3
335 89	121 3	1505 6	*1956 0	2 34631	2 10	0 148	20	5 1039	1 85	2 056	2
219 59	171	1871 4	1957 0	3 4641	3 34	1 291	3 33	6 726	3 21	3 187	2 1
102 29	366 71	2 36 0	1958 0	3 58193	0 00	1 435	3 45	6 4412	3 56	3 317	1 0
467 9	46 1	2600 8	1959 0	3 69973	0 23	1 578	0 00	6 6099	3 9	3 448	7 1
349 98	1 5 53	965 8	1960 0	3 81754	0 47	1 721	0 12	6 7785	4 27	3 579	6 0
33 68	5 94	333 0	1961 0	4 93535	1 71	2 864	1 5	0 7936	5 63	4 710	5 9
116 38	370 94	3697	1962 0	5 5316	1 94	3 007	1 37	0 96 3	5 98	4 841	4 8
481 38	50 35	4062 3	1963 0	5 17096	18	3 151	1 50	1 1310	6 34	4 971	3 7
364 08	1 9 76	96 7	*1964 0	5 8877	42	3 94	1 6	1 2996	6 69	5 10	2 7
247 78	10 17	460 5	1965 0	6 40658	0 08	0 860	2 74	2 4683	0 90	6 33	2 6
130 48	375 17	8 5 3	1966 0	6 5 439	0 31	1 003	2 87	2 6369	1 5	6 364	1 5
13 17	54 59	1190 3	1967 0	6 64219	0 55	1 147	2 99	8056	1 61	6 495	0 4
378 17	134 00	1555	1968 0	6 76000	0 79	1 90	3 1	2 9742	1 96	6 6 5	6 5
61 87	14 41	19 1 1	1969 0	0 723 6	2 02	433	0 66	4 14 9	3 32	0 602	6 4
144 57	379 41	86 3	1970 0	0 84106	26	576	0 79	4 3116	3 67	0 733	5 3
27 7	258 8	2651 5	1971 0	0 95887	2 49	2 720	0 91	4 4802	4 03	0 863	4 2
39 7	138 3	3016 6	*1972 0	1 07668	73	863	1 04	4 6489	4 38	0 994	3 1
75 97	18 64	3382 7	1973 0	2 19449	0 39	0 4 9	16	5 8175	5 74	2 1 5	3 0
158 66	383 64	3747 5	1974 0	31 9	0 63	0 572	9	5 986	6 09	2 256	1 9
41 36	63 05	4112 2	1975 0	43010	0 86	715	2 41	6 1548	6 45	2 387	0 8
406 36	142 46	144 4	*1976 0	54791	1 10	0 859	53	6 3 35	6 80	2 517	6 9
290 06	87	510 8	1977 0	3 6657	34	2 00	0 08	0 3386	1 01	3 648	6 8
17 76	387 87	875 1	1978 0	3 7835	57	145	0 1	0 5073	1 36	3 779	5 7
55 46	267 28	1 40 2	1979 0	3 90133	81	88	0 33	0 6759	1 7	3 910	4 6
420 46	146 69	1605 6	1980 0	4 1914	3 05	432	0 45	0 8446	07	4 041	3 5
304 15	7 10	197 0	1981 0	5 13695	0 71	3 575	1 58	2 0132	3 43	5 171	3 4
186 85	39 10	237 3	1982 0	5 5475	0 94	0 141	1 70	1819	3 79	5 30	3
69 55	71 51	70 2	1983 0	5 37256	1 18	0 284	1 83	2 3506	4 14	5 433	1 2
434 55	150 9	3 66 6	*1984 0	5 49 37	1 42	0 4 8	1 95	2 5192	4 49	5 564	0 1
318 25	31 33	3431 9	1985 0	6 6 818	65	1 571	3 08	3 6879	5 86	6 695	0 1
2 0 95	396 33	3796 0	1986 0	6 7 598	2 89	1 714	3 20	3 8565	6 1	6 825	6 1
83 64	75 74	4160 3	1987 0	6 84379	3 13	1 857	3 3	4 0 5	6 56	6 956	5 0
448 64	155 15	192 6	1988 0	6 96160	3 36	001	3 45	4 1939	6 92	7 087	4 0
33 34	35 56	558 8	1989 0	0 92485	10	3 144	1 00	5 36 5	1 12	1 063	3 9
15 04	40 56	924 3	1990 0	1 04266	1 6	3 87	1 12	5 531	1 48	1 194	2 8
97 74	79 97	1 9 1	1991 0	1 16047	1 5	3 430	1 24	5 6998	1 83	1 3 5	1 7
46 74	159 38	1655 8	*1992 0	1 78 8	1 73	3 573	1 37	5 8685	2 19	1 456	0 6
346 44	39 79	20 3	1993 0	39608	97	1 140	2 49	7 0372	3 54	2 587	0 5
9 14	4 4 79	387 4	1994 0	51389	3 1	1 283	6	0 052	3 90	2 717	6 6
111 83	284	275 1	1995 0	2 63170	3 44	1 4 6	2 74	0 2 09	4 25	848	5 5
476 83	163 61	3116 4	*1996 0	2 74951	0 10	1 569	87	0 3896	4 61	2 979	4 4
360 53	44 02	3481 6	1997 0	3 86731	1 34	713	0 41	1 5582	5 96	4 110	4 3
43 3	409 02	3845 9	1998 0	3 98512	1 57	2 856	0 54	1 7 69	6 3	4 41	3
125 93	88 43	4 10 5	1999 0	4 10 93	1 81	2 999	0 66	1 8955	6 67	4 371	2 1
8 63	167 84	4 9	*2000 0	4 074	2 05	3 142	0 79	2 0642	7 03	4 502	1 0
482 30	485 59	433 6	Per ods	7 15455	3 58	3 577	3 58	7 1536	7 15	7 154	7 2

T b t i th Tru L git d d dt J p t O b i t th t i f o l m m t b p p l m t d b y th q i f T b l XII XXXII



# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### XII      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12
Day	Mean Long.	A	B	C	D	E	F	G	H	I	J— $\alpha$
	<sup>o</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
<b>Jan.</b>											
1	50°31765	1°00000	1°000	1°00	1°0000	1°0000	1°00	1°00	1°00	1°00	1°00
2	100°63529	2°00000	2°000	2°00	2°0000	2°0000	2°00	2°00	2°00	2°00	2°00
3	150°95294	3°00000	3°000	3°00	3°0000	3°0000	3°00	3°00	3°00	3°00	3°00
4	201°27059	4°00000	4°000	4°00	4°0000	4°0000	4°00	4°00	4°00	4°00	4°00
5	251°58823	5°00000	5°000	5°00	5°0000	5°0000	5°00	5°00	5°00	5°00	5°00
6	301°90588	6°00000	6°000	6°00	6°0000	6°0000	6°00	6°00	6°00	6°00	6°00
7	352°22352	7°00000	7°000	7°00	7°0000	7°0000	0°05	0°05	7°00	7°00	7°00
8	42°54117	0°94907	8°000	0°84	0°8445	0°8452	1°05	1°05	0°82	8°00	8°00
9	92°85882	1°94907	9°000	1°84	1°8445	1°8452	2°05	2°05	1°82	9°00	9°00
10	143°17646	2°94907	10°000	2°84	2°8445	2°8452	3°05	3°05	2°82	10°00	10°00
11	193°49411	3°94907	11°000	3°84	3°8445	3°8452	4°05	4°05	3°82	11°00	11°00
12	243°81176	4°94907	12°000	4°84	4°8445	4°8452	5°05	5°05	4°82	12°00	12°00
13	294°12940	5°94907	0°477	5°84	5°8445	5°8452	6°05	6°05	5°82	13°00	13°00
14	344°44705	6°94907	1°477	6°84	6°8445	6°8452	0°10	0°10	6°82	14°00	14°00
15	34°76469	0°89815	2°477	0°68	0°6889	0°6904	1°10	1°10	0°65	15°00	15°00
16	85°08234	1°89815	3°477	1°68	1°6889	1°6904	2°10	2°10	1°65	16°00	16°00
17	135°39999	2°89815	4°477	2°68	2°6889	2°6904	3°10	3°10	2°65	17°00	17°00
18	185°71763	3°89815	5°477	3°68	3°6889	3°6904	4°10	4°10	3°65	18°00	18°00
19	236°03528	4°89815	6°477	4°68	4°6889	4°6904	5°10	5°10	4°65	19°00	19°00
20	286°35293	5°89815	7°477	5°68	5°6889	5°6904	6°10	6°10	5°65	20°00	20°00
21	336°67057	6°89815	8°477	6°68	6°6889	6°6904	0°15	0°15	6°65	21°00	21°00
22	26°98822	0°84722	9°477	0°52	0°5334	0°5356	1°15	1°15	0°47	22°00	22°00
23	77°30586	1°84722	10°477	1°52	1°5334	1°5356	2°15	2°15	1°47	23°00	23°00
24	127°62351	2°84722	11°477	2°52	2°5334	2°5356	3°15	3°15	2°47	24°00	24°00
25	177°94116	3°84722	12°477	3°52	3°5334	3°5356	4°15	4°15	3°47	25°00	25°00
26	228°25880	4°84722	0°954	4°52	4°5334	4°5356	5°15	5°15	4°47	26°00	26°00
27	278°57645	5°84722	1°954	5°52	5°5334	5°5356	6°15	6°15	5°47	27°00	27°00
28	328°89410	6°84722	2°954	6°52	6°5334	6°5356	0°20	0°20	6°47	28°00	28°00
29	19°21174	0°79629	3°954	0°35	0°3779	0°3807	1°20	1°20	0°29	29°00	29°00
30	69°52939	1°79629	4°954	1°35	1°3779	1°3807	2°20	2°20	1°29	30°00	30°00
<b>Feb.</b>											
31	119°84703	2°79629	5°954	2°35	2°3779	2°3807	3°20	3°20	2°29	31°00	31°00
1	170°16468	3°79629	6°954	3°35	3°3779	3°3807	4°20	4°20	3°29	32°00	32°00
2	220°48233	4°79629	7°954	4°35	4°3779	4°3807	5°20	5°20	4°29	33°00	33°00
3	270°79997	5°79629	8°954	5°35	5°3779	5°3807	6°20	6°20	5°29	34°00	34°00
4	321°11762	6°79629	9°954	6°35	6°3779	6°3807	0°25	0°25	6°29	35°00	35°00
5	11°43527	0°74536	10°954	0°19	0°2223	0°2259	1°25	1°25	0°11	36°00	36°00
6	61°75291	1°74536	11°954	1°19	1°2223	1°2259	2°25	2°25	1°11	37°00	37°00
7	112°07056	2°74536	0°430	2°19	2°2223	2°2259	3°25	3°25	2°11	38°00	38°00
8	162°38821	3°74536	1°430	3°19	3°2223	3°2259	4°25	4°25	3°11	39°00	39°00
9	212°70585	4°74536	2°430	4°19	4°2223	4°2259	5°25	5°25	4°11	40°00	40°00
10	263°02350	5°74536	3°430	5°19	5°2223	5°2259	6°25	6°25	5°11	41°00	41°00
11	313°34114	6°74536	4°430	6°19	6°2223	6°2259	0°30	0°30	6°11	42°00	42°00
12	3°65879	0°69444	5°430	0°03	0°0668	0°0711	1°30	1°30	7°11	43°00	43°00
13	53°97644	1°69444	6°430	1°03	1°0668	1°0711	2°30	2°30	0°94	44°00	44°00
14	104°29408	2°69444	7°430	2°03	2°0668	2°0711	3°30	3°30	1°94	45°00	45°00
15	154°61173	3°69444	8°430	3°03	3°0668	3°0711	4°30	4°30	2°94	46°00	46°00
16	204°92938	4°69444	9°430	4°03	4°0668	4°0711	5°30	5°30	3°94	47°00	47°00
17	255°24702	5°69444	10°430	5°03	5°0668	5°0711	6°30	6°30	4°94	48°00	48°00
18	305°56467	6°69444	11°430	6°03	6°0668	6°0711	0°35	0°35	5°94	49°00	49°00
19	355°88231	0°64351	12°430	7°03	7°0668	7°0711	1°35	1°35	6°94	50°00	50°00
20	46°19996	1°64351	0°907	0°87	0°9112	0°9163	2°35	2°35	0°76	0°84	51°00
21	96°51761	2°64351	1°907	1°87	1°9112	1°9163	3°35	3°35	1°76	1°84	52°00
22	146°83525	3°64351	2°907	2°87	2°9112	2°9163	4°35	4°35	2°76	2°84	53°00

In Leap Year diminish the date in Columns 1, 13, by 1 day after Feb. 28.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### XII      Motions of Mean Longitude and the Arguments for Days

3	4	5	6	7	8	9			
Day	N	O	P	Q	R	S	T	U	V
				d	d			d	d
<b>Jan</b>	<b>1</b>	0	I 00	I 0	I 000	I 00	I 00 0	I 00	I 000
	<b>2</b>	0	0000	00	000	0	0000	2 0	000
	<b>3</b>	0	3 0	3 00	3 0 0	3 0	3 000	3 00	3 00
	<b>4</b>	00	4 000	42	0 423	0 4	4 0	4 00	4 0 0
	<b>5</b>	0	5 00 0	I 4	I 4 3	I 42	5 0000	5 00	5 0
	<b>6</b>	00	6 0000	4	4 3	42	6 000	6 00	6 000
	<b>7</b>	00	7 0000	3 4	3 4 3	3 4	7 000	7 0	7 00
	<b>8</b>	00	0 84545	0 85	0 846	0 85	0 8464	0 85	0 846
	<b>9</b>	00	I 84545	I 85	I 846	I 85	I 8464	I 85	I 846
	<b>10</b>	00	2 84545	85	846	2 85	2 8464	85	2 846
	<b>11</b>	00	3 84545	0 7	0 269	0 27	3 8464	3 85	3 846
	<b>12</b>	00	4 84545	I 7	I 69	I 27	4 8464	4 85	4 846
	<b>13</b>	00	5 84545	7	69	2 27	5 8464	5 85	5 846
	<b>14</b>	0	6 84545	3 27	3 69	3 7	6 8464	6 85	6 846
	<b>15</b>	0	69089	70	69	0 69	0 6929	0 70	0 691
	<b>16</b>	0	I 69089	I 70	I 692	I (9	I 6) 9	I 70	I 691
	<b>17</b>	0	69 89	70	69	6)	692)	70	2 691
	<b>18</b>	00	3 69089	0 I	0 I I5	0 I I	3 (9 9	3 70	3 691
	<b>19</b>	I	4 69089	I I	I I I5	I I I	4 69 9	4 70	4 691
	<b>20</b>	I	5 69089	I	2 I I5	2 I I	5 69 9	5 70	5 691
	<b>21</b>	0 I	6 69089	3 I	3 I I5	3 I I	6 6929	6 70	6 691
	<b>22</b>	0 I	0 53634	0 54	0 538	54	0 5393	0 55	0 537
	<b>23</b>	I	I 53634	I 54	I 538	I 54	I 5393	I 55	I 537
	<b>24</b>	0 I	53634	54	538	2 54	5393	2 55	537
	<b>25</b>	0 I	3 53634	3 54	3 538	3 54	3 5393	3 55	3 537
	<b>26</b>	0 I	4 53634	97	0 961	0 96	4 5393	4 55	4 537
	<b>27</b>	0 I	5 53634	I 97	I 961	I 96	5 5393	5 55	5 537
	<b>28</b>	0 I	6 53634	2 97	2 961	96	6 5393	6 55	6 537
	<b>29</b>	0 I	0 38179	0 39	0 384	0 38	0 3858	40	0 383
	<b>30</b>	0 I	I 38179	I 39	I 384	I 38	I 3858	I 40	I 383
	<b>31</b>	I	2 38179	39	2 384	38	2 3858	2 40	2 383
<b>Feb</b>	<b>1</b>	0 I	3 38179	3 39	3 384	3 38	3 3858	3 40	3 383
	<b>2</b>	I	4 38 79	0 81	0 8 7	0 81	4 3858	4 40	4 383
	<b>3</b>	0 I	5 38179	I 81	I 807	I 81	5 3858	5 40	5 383
	<b>4</b>	0 I	6 38179	2 81	807	81	6 3858	6 40	6 383
	<b>5</b>	0 I	0 7 4	0 4	0 30	0 3	0 32	0 25	0 229
	<b>6</b>	0 I	I 2 7 4	I 24	I 30	I 3	I 23 2	I 25	I 29
	<b>7</b>	0 I	7 4	4	230	23	3	2 5	2 29
	<b>8</b>	0 I	3 7 4	3 4	3 30	3 3	3 23	3 5	3 2 9
	<b>9</b>	0 I	4 7 4	0 66	0 653	0 65	4 322	4 25	4 2 9
	<b>10</b>	0 I	5 27 4	I 66	I 653	I 65	5 322	5 25	5 229
	<b>11</b>	0 I	6 7 4	66	653	65	6 3	6 5	6 29
	<b>12</b>	I	0 7 68	09	0 076	0 07	0 0787	0 10	0 074
	<b>13</b>	0 I	I 7 68	I 09	I 076	I 07	I 0787	I 10	I 074
	<b>14</b>	0 I	07268	2 09	076	2 07	0787	2 1	2 074
	<b>15</b>	0 I	3 68	3 9	3 076	3 07	3 787	3 10	3 074
	<b>16</b>	0 I	4 7 68	0 51	0 499	0 50	4 787	4 10	4 074
	<b>17</b>	I	5 07 68	I 51	I 499	I 50	5 0787	5 10	5 074
	<b>18</b>	0 I	6 07 68	51	2 499	50	6 0787	6 1	6 74
	<b>19</b>	I	7 07 68	3 51	3 499	3 50	7 787	7 10	7 074
	<b>20</b>	0 I	91813	0 93	0 9 2	0 92	9 51	95	0 920
	<b>21</b>	I	I 91813	I 93	I 9 2	I 92	I 9 51	I 95	I 920
	<b>22</b>	0 I	91813	93	9	2 92	2 9 51	95	2 920

I L p Y    dimini h th d tel C l m    3 by d y aft F b 8

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12
Day	Mean Long.	A	B	C	D	E	F	G	H	I	J— $\alpha$
	<sup>o</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
<b>Feb. 23</b>	197°15290	4°64351	3°907	3°87	3°9112	3°9163	5°35	5°35	3°76	3°84	54°00
<b>24</b>	247°47055	5°64351	4°907	4°87	4°9112	4°9163	6°35	6°35	4°76	4°84	55°00
<b>25</b>	297°78819	6°64351	5°907	5°87	5°9112	5°9163	0°41	0°40	5°76	5°84	56°00
<b>26</b>	348°10584	0°59258	6°907	6°87	6°9112	6°9163	1°41	1°40	6°76	6°84	57°00
<b>27</b>	38°42348	1°59258	7°907	0°71	0°7557	0°7615	2°41	2°40	0°58	7°84	58°00
<b>28</b>	88°74113	2°59258	8°907	1°71	1°7557	1°7615	3°41	3°40	1°58	8°84	59°00
<b>Mar. 1</b>	139°05878	3°59258	9°907	2°71	2°7557	2°7615	4°41	4°40	2°58	9°84	60°00
<b>2</b>	189°37642	4°59258	10°907	3°71	3°7557	3°7615	5°41	5°40	3°58	10°84	61°00
<b>3</b>	239°69407	5°59258	11°907	4°71	4°7557	4°7615	6°41	6°40	4°58	11°84	62°00
<b>4</b>	290°01172	6°59258	0°384	5°71	5°7557	5°7615	0°46	0°45	5°58	12°84	63°00
<b>5</b>	340°32936	0°54166	1°384	6°71	6°7557	6°7615	1°46	1°45	6°58	13°84	64°00
<b>6</b>	30°64701	1°54166	2°384	0°55	0°6002	0°6066	2°46	2°45	0°41	14°84	65°00
<b>7</b>	80°96466	2°54166	3°384	1°55	1°6002	1°6066	3°46	3°45	1°41	15°84	66°00
<b>8</b>	131°28230	3°54166	4°384	2°55	2°6022	2°6066	4°46	4°45	2°41	16°84	67°00
<b>9</b>	181°59995	4°54166	5°384	3°55	3°6002	3°6066	5°46	5°45	3°41	17°84	68°00
<b>10</b>	231°91759	5°54166	6°384	4°55	4°6002	4°6066	6°46	6°45	4°41	18°84	69°00
<b>11</b>	282°23524	6°54166	7°384	5°55	5°6002	5°6066	0°51	0°50	5°41	19°84	70°00
<b>12</b>	332°55289	0°49073	8°384	6°55	6°6002	6°6066	1°51	1°50	6°41	20°84	71°00
<b>13</b>	22°87053	1°49073	9°384	0°39	0°4446	0°4518	2°51	2°50	0°23	21°84	72°00
<b>14</b>	73°18818	2°49073	10°384	1°39	1°4446	1°4518	3°51	3°50	1°23	22°84	73°00
<b>15</b>	123°50583	3°49073	11°384	2°39	2°4446	2°4518	4°51	4°50	2°23	23°84	74°00
<b>16</b>	173°82347	4°49073	12°384	3°39	3°4446	3°4518	5°51	5°50	3°23	24°84	75°00
<b>17</b>	224°14112	5°49073	0°861	4°39	4°4446	4°4518	6°51	6°50	4°23	25°84	76°00
<b>18</b>	274°45876	6°49073	1°861	5°39	5°4446	5°4518	0°56	0°55	5°23	26°84	77°00
<b>19</b>	324°77641	0°43980	2°861	6°39	6°4446	6°4518	1°56	1°55	6°23	27°84	78°00
<b>20</b>	15°09406	1°43980	3°861	0°23	0°2891	0°2970	2°56	2°55	0°05	28°84	79°00
<b>21</b>	65°41170	2°43980	4°861	1°23	1°2891	1°2970	3°56	3°55	1°05	29°84	80°00
<b>22</b>	115°72935	3°43980	5°861	2°23	2°2891	2°2970	4°56	4°55	2°05	30°84	81°00
<b>23</b>	166°04700	4°43980	6°861	3°23	3°2891	3°2970	5°56	5°55	3°05	31°84	82°00
<b>24</b>	216°36464	5°43980	7°861	4°23	4°2891	4°2970	6°56	6°55	4°05	32°84	83°00
<b>25</b>	266°68229	6°43980	8°861	5°23	5°2891	5°2970	0°61	0°60	5°05	33°84	84°00
<b>26</b>	316°99993	0°38887	9°861	6°23	6°2891	6°2970	1°61	1°60	6°05	34°84	85°00
<b>27</b>	7°31758	1°38887	10°861	0°06	0°1336	0°1422	2°61	2°60	7°05	35°84	86°00
<b>28</b>	57°63523	2°38887	11°861	1°06	1°1336	1°1422	3°61	3°60	0°87	36°84	87°00
<b>29</b>	107°95287	3°38887	0°337	2°06	2°1336	2°1422	4°61	4°60	1°87	37°84	88°00
<b>30</b>	158°27052	4°38887	1°337	3°06	3°1336	3°1422	5°61	5°60	2°87	38°84	89°00
<b>31</b>	208°58817	5°38887	2°337	4°06	4°1336	4°1422	6°61	6°60	3°87	39°84	90°00
<b>April 1</b>	258°90581	6°38887	3°337	5°06	5°1336	5°1422	0°66	0°65	4°87	40°84	91°00
<b>2</b>	309°22346	0°33795	4°337	6°06	6°1336	6°1422	1°66	1°65	5°87	41°84	92°00
<b>3</b>	359°54110	1°33795	5°337	7°06	7°1336	7°1422	2°66	2°65	6°87	42°84	93°00
<b>4</b>	49°85875	2°33795	6°337	0°90	0°9780	0°9874	3°66	3°65	0°70	43°84	94°00
<b>5</b>	100°17640	3°33795	7°337	1°90	1°9780	1°9874	4°66	4°65	1°70	44°84	95°00
<b>6</b>	150°49404	4°33795	8°337	2°90	2°9780	2°9874	5°66	5°65	2°70	45°84	96°00
<b>7</b>	200°81169	5°33795	9°337	3°90	3°9780	3°9874	6°66	6°65	3°70	46°84	97°00
<b>8</b>	251°12934	6°33795	10°337	4°90	4°9780	4°9874	0°71	0°70	4°70	47°84	98°00
<b>9</b>	301°44698	0°28702	11°337	5°90	5°9780	5°9874	1°71	1°70	5°70	48°84	99°00
<b>10</b>	351°76463	1°28702	12°337	6°90	6°9780	6°9874	2°71	2°70	6°70	49°84	100°00
<b>11</b>	42°08228	2°28702	0°814	0°74	0°8225	0°8326	3°71	3°70	0°52	0°68	101°00
<b>12</b>	92°39992	3°28702	1°814	1°74	1°8225	1°8326	4°71	4°70	1°52	1°68	102°00
<b>13</b>	142°71757	4°28702	2°814	2°74	2°8225	2°8326	5°71	5°70	2°52	2°68	103°00
<b>14</b>	193°03521	5°28702	3°814	3°74	3°8225	3°8326	6°71	6°70	3°52	3°68	104°00
<b>15</b>	243°35286	6°28702	4°814	4°74	4°8225	4°8326	0°76	0°75	4°52	4°68	105°00
<b>16</b>	293°67051	0°23609	5°814	5°74	5°8225	5°8326	1°76	1°75	5°52	5°68	106°00

In Leap Year diminish the date in Columns 1, 13, by 1 day after Feb. 28.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued Motions of Mean Longitude and the Arguments for Days

3	4	5	6	7	8	9			
Day	N	O	P	Q	R	S	T	U	V
<b>Feb 23</b>	0 1	3 91813	0 36	345	0 34	3 9 51	3 95	3 920	3 8
<b>24</b>	2	4 91813	1 36	1 345	1 34	4 9 51	4 95	4 9 0	4 8
<b>25</b>	0	5 91813	2 36	2 345	2 34	5 9 51	5 95	5 920	5 8
<b>26</b>	2	6 91813	3 36	3 345	3 34	6 9251	6 95	6 920	6 8
<b>27</b>	0 2	0 76358	0 78	0 768	0 76	7716	0 80	0 766	0 6
<b>28</b>	2	1 76358	1 78	1 768	1 76	1 7716	1 80	1 766	1 6
<b>Mar 1</b>		76358	78	2 768	76	7716	80	2 766	6
<b>2</b>	0	3 76358	0 21	0 191	0 19	3 7716	3 8	3 766	3 6
<b>3</b>	0	4 76358	1 1	1 191	1 19	4 7716	4 80	4 766	4 6
<b>4</b>	0 2	5 76358	2 1	2 191	2 19	5 7716	5 80	5 766	5 6
<b>5</b>	0 2	6 76358	3 21	3 191	3 19	6 7716	6 80	6 766	6 6
<b>6</b>	0	6 90	0 63	0 614	0 61	0 6180	0 65	611	0 4
<b>7</b>	0	1 609	1 63	1 614	1 61	1 6180	1 65	1 611	1 4
<b>8</b>	0 2	6090	63	2 614	2 61	2 6180	65	2 611	2 4
<b>9</b>	0	3 6 9	0 05	0 036	0 03	3 6180	3 65	3 611	3 4
<b>10</b>	0	4 60902	1 05	1 036	1 03	4 6180	4 65	4 611	4 4
<b>11</b>	0 2	5 6 90	2 5	036	2 03	5 6180	5 65	5 611	5 4
<b>12</b>	0	6 60902	3 05	3 036	3 03	6 6180	6 65	6 611	6 4
<b>13</b>	0	0 45447	0 48	0 459	0 46	0 4644	0 50	0 457	0 2
<b>14</b>	2	1 45447	1 48	1 459	1 46	1 4644	1 50	1 457	1 2
<b>15</b>	0	2 45447	2 48	459	2 46	2 4644	2 50	2 457	2 2
<b>16</b>	0	3 45447	3 48	3 459	3 46	3 4644	3 50	3 457	3 2
<b>17</b>	0	4 45447	0 90	0 882	0 88	4 4644	4 50	4 457	4
<b>18</b>	0 2	5 45447	1 90	1 88	1 88	5 4644	5 50	5 457	5 2
<b>19</b>	0 2	6 45447	2 90	2 88	88	6 4644	6 50	6 457	6 2
<b>20</b>	2	0 999	0 33	0 305	0 30	0 3109	0 35	0 303	0 0
<b>21</b>	0 2	1 9992	1 33	1 305	1 30	1 3109	1 35	1 3 3	1 0
<b>22</b>	0	9992	33	305	2 30	3109	35	303	2 0
<b>23</b>	0 2	3 999	3 33	3 305	3 30	3 3109	3 35	3 303	3 0
<b>24</b>	0	4 2999	0 75	0 7 8	0 7	4 3109	4 35	4 303	4 0
<b>25</b>	0 2	5 2999	1 75	1 7 8	1 72	5 3109	5 35	5 3 3	5 0
<b>26</b>	0	6 9992	2 75	2 7 8	7	6 3109	6 35	6 303	6 0
<b>27</b>	0 2	0 14537	0 17	0 151	0 15	0 1573	0 20	0 148	7 0
<b>28</b>	0	1 14537	1 17	1 151	1 15	1 1573	1 20	1 148	0 9
<b>29</b>	0 2	2 14537	17	2 151	2 15	2 1573	2 20	2 148	1 9
<b>30</b>	0	3 14537	3 17	3 151	3 15	3 1573	3 20	3 148	2 9
<b>31</b>	0	4 14537	0 60	0 574	0 57	4 1573	4 0	4 148	3 9
<b>April 1</b>	0	5 14537	1 60	1 574	1 57	5 1573	5 20	5 148	4 9
<b>2</b>	3	6 14537	6	2 574	2 57	6 1573	6 20	6 148	5 9
<b>3</b>	3	7 14537	0	3 574	3 57	0 0 38	05	7 148	6 9
<b>4</b>	0 3	0 99081	1	0 997	0 99	1 0 38	1 05	994	7
<b>5</b>	0 3	1 99081	02	1 997	1 99	0 38	2 05	1 994	1 7
<b>6</b>	0 3	2 99 81	3 0	2 997	2 99	3 0038	3 05	2 994	2 7
<b>7</b>	0 3	3 99081	44	0 4 0	0 4	4 038	4 5	3 994	3 7
<b>8</b>	0 3	4 99081	1 44	1 42	1 42	5 0038	5 05	4 994	4 7
<b>9</b>	0 3	5 99 81	44	2 4 0	2 42	6 038	6 05	5 994	5 7
<b>10</b>	0 3	6 99081	3 44	3 420	3 42	7 038	7 05	6 994	6 7
<b>11</b>	0 3	0 83626	0 87	0 843	0 84	0 8502	0 90	0 840	0 5
<b>12</b>	0 3	1 836 6	1 87	1 843	1 84	1 8502	1 90	1 84	1 5
<b>13</b>	0 3	2 836 6	87	2 843	2 84	850	90	2 840	5
<b>14</b>	0 3	3 836 6	0 29	0 66	0 26	3 850	3 90	3 840	3 5
<b>15</b>	0 3	4 83626	1 9	1 266	1 26	4 850	4 9	4 840	4 5
<b>16</b>	0 3	5 83626	2 9	266	6	5 850	5 90	5 84	5 5

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12
Day	Mean Long.	A	B	C	D	E	F	G	H	I	J— $\alpha$
	<sup>o</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
<b>April 17</b>	343°98815	1°23609	6°814	6°74	6°8225	6°8326	2°76	2°75	6°52	6°68	107°00
<b>18</b>	34°30580	2°23609	7°814	0°58	0°6670	0°6777	3°76	3°75	0°34	7°68	108°00
<b>19</b>	84°62345	3°23609	8°814	1°58	1°6670	1°6777	4°76	4°75	1°34	8°68	109°00
<b>20</b>	134°94109	4°23609	9°814	2°58	2°6670	2°6777	5°76	5°75	2°34	9°68	110°00
<b>21</b>	185°25874	5°23609	10°814	3°58	3°6670	3°6777	6°76	6°75	3°34	10°68	111°00
<b>22</b>	235°57638	6°23609	11°814	4°58	4°6670	4°6777	0°81	0°80	4°34	11°68	112°00
<b>23</b>	285°89403	0°18517	0°291	5°58	5°6670	5°6777	1°81	1°80	5°34	12°68	113°00
<b>24</b>	336°21168	1°18517	1°291	6°58	6°6670	6°6777	2°81	2°80	6°34	13°68	114°00
<b>25</b>	26°52932	2°18517	2°291	0°42	0°5114	0°5229	3°81	3°80	0°16	14°68	115°00
<b>26</b>	76°84697	3°18517	3°291	1°42	1°5114	1°5229	4°81	4°80	1°16	15°68	116°00
<b>27</b>	127°16462	4°18517	4°291	2°42	2°5114	2°5229	5°81	5°80	2°16	16°68	117°00
<b>28</b>	177°48226	5°18517	5°291	3°42	3°5114	3°5229	6°81	6°80	3°16	17°68	118°00
<b>29</b>	227°79991	6°18517	6°291	4°42	4°5114	4°5229	0°86	0°85	4°16	18°68	119°00
<b>30</b>	278°11755	0°13424	7°291	5°42	5°5114	5°5229	1°86	1°85	5°16	19°68	120°00
<b>May 1</b>	328°43520	1°13424	8°291	6°42	6°5114	6°5229	2°86	2°85	6°16	20°68	121°00
<b>2</b>	18°75285	2°13424	9°291	0°26	0°3559	0°3681	3°86	3°85	7°16	21°68	122°00
<b>3</b>	69°07049	3°13424	10°291	1°26	1°3559	1°3681	4°86	4°85	0°99	22°68	123°00
<b>4</b>	119°38814	4°13424	11°291	2°26	2°3559	2°3681	5°86	5°85	1°99	23°68	124°00
<b>5</b>	169°70579	5°13424	12°291	3°26	3°3559	3°3681	6°86	6°85	2°99	24°68	125°00
<b>6</b>	220°02343	6°13424	0°768	4°26	4°3559	4°3681	0°91	0°90	3°99	25°68	126°00
<b>7</b>	270°34108	0°08331	1°768	5°26	5°3559	5°3681	1°91	1°90	4°99	26°68	127°00
<b>8</b>	320°65873	1°08331	2°768	6°26	6°3559	6°3681	2°91	2°90	5°99	27°68	128°00
<b>9</b>	10°97637	2°08331	3°768	0°10	0°2003	0°2133	3°91	3°90	6°99	28°68	129°00
<b>10</b>	61°29402	3°08331	4°768	1°10	1°2003	1°2133	4°91	4°90	0°81	29°68	130°00
<b>11</b>	111°61166	4°08331	5°768	2°10	2°2003	2°2133	5°91	5°90	1°81	30°68	131°00
<b>12</b>	161°92931	5°08331	6°768	3°10	3°2003	3°2133	6°91	6°90	2°81	31°68	132°00
<b>13</b>	212°24696	6°08331	7°768	4°10	4°2003	4°2133	0°96	0°95	3°81	32°68	133°00
<b>14</b>	262°56460	0°03238	8°768	5°10	5°2003	5°2133	1°96	1°95	4°81	33°68	134°00
<b>15</b>	312°88225	1°03238	9°768	6°10	6°2003	6°2133	2°96	2°95	5°81	34°68	135°00
<b>16</b>	3°19990	2°03238	10°768	7°10	0°0448	0°0585	3°96	3°95	6°81	35°68	136°00
<b>17</b>	53°51754	3°03238	11°768	0°94	1°0448	1°0585	4°96	4°95	0°63	36°68	137°00
<b>18</b>	103°83519	4°03238	0°244	1°94	2°0448	2°0585	5°96	5°95	1°63	37°68	138°00
<b>19</b>	154°15283	5°03238	1°244	2°94	3°0448	3°0585	0°01	0°00	2°63	38°68	139°00
<b>20</b>	204°47048	6°03238	2°244	3°94	4°0448	4°0585	1°01	1°00	3°63	39°68	140°00
<b>21</b>	254°78813	7°03238	3°244	4°94	5°0448	5°0585	2°01	2°00	4°63	40°68	141°00
<b>22</b>	305°10577	0°98146	4°244	5°94	6°0448	6°0585	3°01	3°00	5°63	41°68	142°00
<b>23</b>	355°42342	1°98146	5°244	6°94	7°0448	7°0585	4°01	4°00	6°63	42°68	143°00
<b>24</b>	45°74107	2°98146	6°244	0°77	0°8893	0°9037	5°01	5°00	0°45	43°68	144°00
<b>25</b>	96°05871	3°98146	7°244	1°77	1°8893	1°9037	6°01	6°00	1°45	44°68	145°00
<b>26</b>	146°37636	4°98146	8°244	2°77	2°8893	2°9037	0°06	0°05	2°45	45°68	146°00
<b>27</b>	196°69400	5°98146	9°244	3°77	3°8893	3°9037	1°06	1°05	3°45	46°68	147°00
<b>28</b>	247°01165	6°98146	10°244	4°77	4°8893	4°9037	2°06	2°05	4°45	47°68	148°00
<b>29</b>	297°32930	0°93053	11°244	5°77	5°8893	5°9037	3°06	3°05	5°45	48°68	149°00
<b>30</b>	347°64694	1°93053	12°244	6°77	6°8893	6°9037	4°06	4°05	6°45	49°68	150°00
<b>31</b>	37°96459	2°93053	0°721	0°61	0°7337	0°7488	5°06	5°05	0°28	0°53	151°00
<b>June 1</b>	88°28224	3°93053	1°721	1°61	1°7337	1°7488	6°06	6°05	1°28	1°53	152°00
<b>2</b>	138°59988	4°93053	2°721	2°61	2°7337	2°7488	0°11	0°10	2°28	2°53	153°00
<b>3</b>	188°91753	5°93053	3°721	3°61	3°7337	3°7488	1°11	1°10	3°28	3°53	154°00
<b>4</b>	239°23517	6°93053	4°721	4°61	4°7337	4°7488	2°11	2°10	4°28	4°53	155°00
<b>5</b>	289°55282	0°87960	5°721	5°61	5°7337	5°7488	3°11	3°10	5°28	5°53	156°00
<b>6</b>	339°87047	1°87960	6°721	6°61	6°7337	6°7488	4°11	4°10	6°28	6°53	157°00
<b>7</b>	30°18811	2°87960	7°721	0°45	0°5782	0°5940	5°11	5°10	0°10	7°53	158°00

In Leap Year diminish the date in Columns 1, 13, by 1 day after Feb. 28.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued

Motions of Mean Longitude and the Arguments for Days

3	4	5	6	7	8	9			
Day	N	O	P	Q	R	S	T	U	V
<b>Apr 1</b>				<sup>d</sup>					<sup>d</sup>
<b>17</b>	3	6 836 6	3 9	3 266	3 6	6 8502	6 90	6 840	6 5
<b>18</b>	0 3	6 8171	0 7	6 89	0 68	0 6967	0 75	0 686	0 3
<b>19</b>	0 3	1 68171	1 7	1 689	1 68	1 6967	1 75	1 686	1 3
<b>20</b>	0 3	6 8171	2 7	2 689	2 68	2 6967	2 75	6 86	3
<b>21</b>	0 3	3 68171	0 14	0 11	0 11	3 6967	3 75	3 686	3 3
<b>22</b>	0 3	4 68171	1 14	1 112	1 11	4 6967	4 75	4 686	4 3
<b>23</b>	0 3	5 68171	2 14	2 112	2 11	5 6967	5 75	5 686	5 3
<b>24</b>	0 3	6 68171	3 14	3 11	3 11	6 6967	6 75	6 686	6 3
<b>25</b>	0 3	0 5 716	0 56	0 535	0 53	0 5431	0 60	0 531	0 1
<b>26</b>	0 3	1 52716	1 56	1 535	1 53	1 5431	1 60	1 531	1 1
<b>27</b>	0 3	5 716	2 56	5 35	5 3	2 5431	2 60	2 531	2 1
<b>28</b>	3	3 52716	3 56	3 535	3 53	3 5431	3 60	3 531	3 1
<b>29</b>	3	4 5 716	0 99	0 958	0 95	4 5431	4 60	4 531	4 1
<b>30</b>	0 3	5 5 716	1 99	1 958	1 95	5 5431	5 60	5 531	5 1
<b>May 1</b>	0 3	6 5 716	99	2 958	2 95	6 5431	6 60	6 531	6 1
<b>2</b>	3	0 37 6	0 41	0 381	0 37	0 3896	0 45	0 377	0 0
<b>3</b>	0 3	1 37 60	1 41	1 381	1 37	1 3896	1 45	1 377	1 0
<b>4</b>	0 3	2 37 60	2 41	2 381	37	2 3896	2 45	2 377	2 0
<b>5</b>	0 3	3 37260	3 41	3 381	3 37	3 3896	3 45	3 377	3 0
<b>6</b>	3	4 37260	0 84	0 804	0 80	4 3896	4 45	4 377	4 0
<b>7</b>	0 3	5 3726	1 84	1 804	1 80	5 3896	5 45	5 377	5 0
<b>8</b>	0 4	6 37 60	84	804	2 80	6 3896	6 45	6 377	6 0
<b>9</b>	0 4	0 1805	0 6	0 27	0 2	0 2360	0 30	0 2 3	7 0
<b>10</b>	0 4	1 1805	1 26	1 2 7	1 22	1 2360	1 30	1 3	0 8
<b>11</b>	0 4	1805	2 6	2 2 7	2 2	2360	2 30	2 223	1 8
<b>12</b>	0 4	3 218 5	3 26	3 7	3	3 2360	3 30	3 223	2 8
<b>13</b>	0 4	4 21805	0 68	0 650	0 64	4 2360	4 30	4 3	3 8
<b>14</b>	0 4	5 1805	1 68	1 650	1 64	5 36	5 30	5 2 3	4 8
<b>15</b>	0 4	6 18 5	68	65	64	6 2360	6 30	6 223	5 8
<b>16</b>	0 4	0 06350	0 11	0 073	0 07	0 0824	0 15	0 068	6 8
<b>17</b>	0 4	1 06350	1 11	1 073	1 07	1 08 4	1 15	1 068	0 6
<b>18</b>	0 4	635	2 11	2 73	07	2 0824	2 15	2 068	1 6
<b>19</b>	0 4	3 0635	3 11	3 73	3 7	3 08 4	3 15	3 068	2 6
<b>20</b>	0 4	4 0635	0 53	0 496	0 49	4 08 4	4 15	4 068	3 6
<b>21</b>	0 4	5 06350	1 53	1 496	1 49	5 08 4	5 15	5 068	4 6
<b>22</b>	0 4	6 06350	2 53	2 496	2 49	6 0824	6 15	6 068	5 6
<b>23</b>	0 4	7 06350	3 53	3 496	3 49	7 0824	0 00	7 068	6 6
<b>24</b>	0 4	0 90894	0 96	0 919	0 91	0 9289	1 00	0 914	0 4
<b>25</b>	0 4	1 90894	1 96	1 919	1 91	1 9 89	2 0	1 914	1 4
<b>26</b>	0 4	90894	2 96	2 919	2 91	2 9289	3 00	2 914	2 4
<b>27</b>	0 4	3 90894	0 38	0 342	0 33	3 9 89	4 00	3 914	3 4
<b>28</b>	0 4	4 9 894	1 38	1 34	1 33	4 9 89	5 0	4 914	4 4
<b>29</b>	0 4	5 90894	2 38	34	2 33	5 9 89	6 0	5 914	5 4
<b>30</b>	0 4	6 90894	3 38	3 342	3 33	6 9 89	7 00	6 914	6 4
<b>31</b>	0 4	0 75439	0 80	0 765	0 76	0 7753	0 85	0 76	0 3
<b>June 1</b>	0 4	1 75439	1 80	1 765	1 76	1 7753	1 85	1 760	1 3
<b>2</b>	0 4	75439	80	2 765	2 76	2 7753	2 85	760	2 3
<b>3</b>	0 4	3 75439	0 23	0 188	0 18	3 7753	3 85	3 760	3 3
<b>4</b>	0 4	4 75439	1 3	1 188	1 18	4 7753	4 85	4 760	4 3
<b>5</b>	0 4	5 75439	2 23	2 188	18	5 7753	5 85	5 760	5 3
<b>6</b>	0 4	6 75439	3 23	3 188	3 18	6 7753	6 85	6 760	6 3
<b>7</b>	0 4	0 59984	0 65	0 611	0 60	0 6218	0 70	0 605	0 1

I L pY d m i n t h d t C l m by d y f t F b 8

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII *continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12
Day	Mean Long.	A	B	C	D	E	F	G	H	I	J— $\alpha$
	°	d	d	d	d	d	d	d	d	d	d
<b>June 8</b>	80°50576	3°87960	8°721	1°45	1°5782	1°5940	6°11	6°10	1°10	8°53	159°00
<b>9</b>	130°82341	4°87960	9°721	2°45	2°5782	2°5940	0°17	0°15	2°10	9°53	160°00
<b>10</b>	181°14105	5°87960	10°721	3°45	3°5782	3°5940	1°17	1°15	3°10	10°53	161°00
<b>11</b>	231°45870	6°87960	11°721	4°45	4°5782	4°5940	2°17	2°15	4°10	11°53	162°00
<b>12</b>	281°77635	0°82868	0°198	5°45	5°5782	5°5940	3°17	3°15	5°10	12°53	163°00
<b>13</b>	332°09399	1°82868	1°198	6°45	6°5782	6°5940	4°17	4°15	6°10	13°53	164°00
<b>14</b>	22°41164	2°82868	2°198	0°29	0°4227	0°4392	5°17	5°15	7°10	14°53	165°00
<b>15</b>	72°72928	3°82868	3°198	1°29	1°4227	1°4392	6°17	6°15	0°92	15°53	166°00
<b>16</b>	123°04693	4°82868	4°198	2°29	2°4227	2°4392	0°22	0°20	1°92	16°53	167°00
<b>17</b>	173°36458	5°82868	5°198	3°29	3°4227	3°4392	1°22	1°20	2°92	17°53	168°00
<b>18</b>	223°68222	6°82868	6°198	4°29	4°4227	4°4392	2°22	2°20	3°92	18°53	169°00
<b>19</b>	273°99987	0°77775	7°198	5°29	5°4227	5°4392	3°22	3°20	4°92	19°53	170°00
<b>20</b>	324°31752	1°77775	8°198	6°29	6°4227	6°4392	4°22	4°20	5°92	20°53	171°00
<b>21</b>	14°63516	2°77775	9°198	0°13	0°2671	0°2844	5°22	5°20	6°92	21°53	172°00
<b>22</b>	64°95281	3°77775	10°198	1°13	1°2671	1°2844	6°22	6°20	0°75	22°53	173°00
<b>23</b>	115°27045	4°77775	11°198	2°13	2°2671	2°2844	0°27	0°25	1°75	23°53	174°00
<b>24</b>	165°58810	5°77775	12°198	3°13	3°2671	3°2844	1°27	1°25	2°75	24°53	175°00
<b>25</b>	215°90575	6°77775	0°675	4°13	4°2671	4°2844	2°27	2°25	3°75	25°53	176°00
<b>26</b>	266°22339	0°72682	1°675	5°13	5°2671	5°2844	3°27	3°25	4°75	26°53	177°00
<b>27</b>	316°54104	1°72682	2°675	6°13	6°2671	6°2844	4°27	4°25	5°75	27°53	178°00
<b>28</b>	6°85869	2°72682	3°675	7°13	0°1116	0°1296	5°27	5°25	6°75	28°53	179°00
<b>29</b>	57°17633	3°72682	4°675	0°97	1°1116	1°1296	6°27	6°25	0°57	29°53	180°00
<b>30</b>	107°49398	4°72682	5°675	1°97	2°1116	2°1296	0°32	0°30	1°57	30°53	181°00
<b>July 1</b>	157°81162	5°72682	6°675	2°97	3°1116	3°1296	1°32	1°30	2°57	31°53	182°00
<b>2</b>	208°12927	6°72682	7°675	3°97	4°1116	4°1296	2°32	2°30	3°57	32°53	183°00
<b>3</b>	258°44692	0°67589	8°675	4°97	5°1116	5°1296	3°32	3°30	4°57	33°53	184°00
<b>4</b>	308°76456	1°67589	9°675	5°97	6°1116	6°1296	4°32	4°30	5°57	34°53	185°00
<b>5</b>	359°08221	2°67589	10°675	6°97	7°1116	7°1296	5°32	5°30	6°57	35°53	186°00
<b>6</b>	49°39986	3°67589	11°675	0°81	0°9561	0°9747	6°32	6°30	0°39	36°53	187°00
<b>7</b>	99°71750	4°67589	0°151	1°81	1°9561	1°9747	0°37	0°35	1°39	37°53	188°00
<b>8</b>	150°03515	5°67589	1°151	2°81	2°9561	2°9747	1°37	1°35	2°39	38°53	189°00
<b>9</b>	200°35280	6°67589	2°151	3°81	3°9561	3°9747	2°37	2°35	3°39	39°53	190°00
<b>10</b>	250°67044	0°62497	3°151	4°81	4°9561	4°9747	3°37	3°35	4°39	40°53	191°00
<b>11</b>	300°98809	1°62497	4°151	5°81	5°9561	5°9747	4°37	4°35	5°39	41°53	192°00
<b>12</b>	351°30573	2°62497	5°151	6°81	6°9561	6°9747	5°37	5°35	6°39	42°53	193°00
<b>13</b>	41°62338	3°62497	6°151	0°65	0°8005	0°8199	6°37	6°35	0°21	43°53	194°00
<b>14</b>	91°94103	4°62497	7°151	1°65	1°8005	1°8199	0°42	0°40	1°21	44°53	195°00
<b>15</b>	142°25867	5°62497	8°151	2°65	2°8005	2°8199	1°42	1°40	2°21	45°53	196°00
<b>16</b>	192°57632	6°62497	9°151	3°65	3°8005	3°8199	2°42	2°40	3°21	46°53	197°00
<b>17</b>	242°89397	0°57404	10°151	4°65	4°8005	4°8199	3°42	3°40	4°21	47°53	198°00
<b>18</b>	293°21161	1°57404	11°151	5°65	5°8005	5°8199	4°42	4°40	5°21	48°53	199°00
<b>19</b>	343°52926	2°57404	12°151	6°65	6°8005	6°8199	5°42	5°40	6°21	49°53	200°00
<b>20</b>	33°84690	3°57404	0°628	0°48	0°6450	0°6651	6°42	6°40	0°04	0°37	201°00
<b>21</b>	84°16455	4°57404	1°628	1°48	1°6450	1°6651	0°47	0°45	1°04	1°37	202°00
<b>22</b>	134°48220	5°57404	2°628	2°48	2°6450	2°6651	1°47	1°45	2°04	2°37	203°00
<b>23</b>	184°79984	6°57404	3°628	3°48	3°6450	3°6651	2°47	2°45	3°04	3°37	204°00
<b>24</b>	235°11749	0°52311	4°628	4°48	4°6450	4°6651	3°47	3°45	4°04	4°37	205°00
<b>25</b>	285°43514	1°52311	5°628	5°48	5°6450	5°6651	4°47	4°45	5°04	5°37	206°00
<b>26</b>	335°75278	2°52311	6°628	6°48	6°6450	6°6651	5°47	5°45	6°04	6°37	207°00
<b>27</b>	26°07043	3°52311	7°628	0°32	0°4895	0°5103	6°47	6°45	7°04	7°37	208°00
<b>28</b>	76°38807	4°52311	8°628	1°32	1°4895	1°5103	0°52	0°50	0°86	8°37	209°00
<b>29</b>	126°70572	5°52311	9°628	2°32	2°4895	2°5103	1°52	1°50	1°86	9°37	210°00

In Leap Year diminish the date in Columns 1, 13, by 1 day after Feb. 28.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued

Motions of Mean Longitude and the Arguments for Days

3	4	5	6	7	8	9			
D y	N	O	P	Q	R	S	T	U	V
				d		1		d	
<b>June 8</b>	04	1 59984	1 65	1 611	1 60	1 6 18	1 70	1 605	1 1
<b>9</b>	4	59984	65	611	2 60	6 18	2 70	605	2 1
<b>10</b>	04	3 59984	07	034	003	3 6218	3 70	3 605	3 1
<b>11</b>	4	4 59984	1 7	1 034	1 03	4 6 18	4 70	4 605	4 1
<b>12</b>	4	5 59984	7	034	2 3	5 6 18	5 70	5 605	5 1
<b>13</b>	04	6 59984	3 7	3 34	3 3	6 6 18	6 70	6 605	6 1
<b>14</b>	5	0 445 9	50	0 457	0 45	0 4682	0 55	0 451	7 1
<b>15</b>	05	1 445 9	1 50	1 457	1 45	1 468	1 55	1 451	0 9
<b>16</b>	05	44529	2 5	457	45	468	55	451	1 9
<b>17</b>	05	3 445 9	3 50	3 457	3 45	3 4682	3 55	3 451	2 9
<b>18</b>	5	4 445 9	92	0 880	87	4 468	4 55	4 451	3 9
<b>19</b>	05	5 445 9	1 9	1 880	1 87	5 468	5 55	5 451	4 9
<b>20</b>	05	6 44529	9	880	87	6 4682	6 55	6 451	5 9
<b>21</b>	05	9073	0 35	0 303	0 9	3147	0 40	0 297	6 9
<b>22</b>	5	1 9 73	1 35	1 303	1 9	1 3147	1 40	1 297	0 7
<b>23</b>	05	2 9073	2 35	2 303	2 29	2 3147	4	2 297	1 7
<b>24</b>	05	3 29073	3 35	3 3 3	3 29	3 3147	3 40	3 297	7
<b>25</b>	05	4 29 73	0 77	0 726	0 72	4 3147	4 40	4 297	3 7
<b>26</b>	5	5 9 73	1 77	1 726	1 7	5 3147	5 40	5 297	4 7
<b>27</b>	05	6 9 73	77	2 726	2 7	6 3147	6 40	6 97	5 7
<b>28</b>	05	0 13618	0 19	0 149	0 14	0 1611	0 5	0 143	6 7
<b>29</b>	05	1 13618	1 19	1 149	1 14	1 1611	1 5	1 143	0 5
<b>30</b>	05	13618	2 19	149	2 14	2 1611	25	2 143	1 5
<b>July 1</b>	05	3 13618	3 19	3 149	3 14	3 1611	3 5	3 143	2 5
<b>2</b>	05	4 13618	0 6	0 57	0 56	4 1611	4 25	4 143	3 5
<b>3</b>	05	5 13618	1 6	1 57	1 56	5 1611	5 25	5 143	4 5
<b>4</b>	05	6 13618	6	57	56	6 1611	6 5	6 143	5 5
<b>5</b>	05	7 13618	0 04	3 57	3 56	0 0076	0 10	7 143	6 5
<b>6</b>	5	0 98163	1 04	995	0 98	1 0076	1 10	0 988	4
<b>7</b>	05	1 98163	2 04	1 995	1 98	2 0076	10	1 988	1 4
<b>8</b>	05	2 98163	3 04	2 995	2 98	3 0076	3 1	2 988	2 4
<b>9</b>	05	3 98163	0 47	0 418	0 41	4 076	4 10	3 988	3 4
<b>10</b>	05	4 98163	1 47	1 418	1 41	5 0076	5 10	4 988	4 4
<b>11</b>	5	5 98163	47	418	41	6 076	6 10	5 988	5 4
<b>12</b>	05	6 98163	3 47	3 418	3 41	7 0076	7 10	6 988	6 4
<b>13</b>	05	827 7	0 89	0 841	0 83	0 8540	0 95	0 834	0 2
<b>14</b>	05	1 8 707	1 89	1 841	1 83	1 8540	1 95	1 834	1 2
<b>15</b>	5	2 8 7 7	89	841	83	8540	2 95	2 834	2
<b>16</b>	05	3 8 7 7	31	0 264	5	3 854	3 95	3 834	3 2
<b>17</b>	05	4 8 707	1 31	1 64	1 25	4 854	4 95	4 834	4 2
<b>18</b>	05	5 8 707	2 31	64	5	5 854	5 95	5 834	5
<b>19</b>	05	6 8 707	3 31	3 64	3 5	6 8540	6 95	6 834	6 2
<b>20</b>	06	67 5	0 74	0 686	0 68	0 7 4	0 80	680	0 0
<b>21</b>	06	1 67 5	1 74	1 686	1 68	1 7 04	1 80	1 68	1 0
<b>22</b>	06	2 67 5	2 74	2 686	2 68	2 70 4	2 80	2 680	2 0
<b>23</b>	06	3 67 52	0 16	0 109	0 1	3 70 4	3 80	3 68	3 0
<b>24</b>	06	4 67 5	1 16	1 1 9	1 1	4 70 4	4 8	4 68	4 0
<b>25</b>	06	5 6725	16	2 1 9	2 10	5 7004	5 8	5 680	5 0
<b>26</b>	06	6 67 52	3 16	3 1 9	3 10	6 7004	6 80	6 680	6 0
<b>27</b>	6	0 51797	0 59	0 53	0 52	0 5469	0 65	0 525	7 0
<b>28</b>	06	1 51797	1 59	1 532	1 52	1 5469	1 65	1 525	0 8
<b>29</b>	06	51797	2 59	53	2 5	5469	65	2 5 5	1 8

I L p X dimi i h t h d t i C l m by d y f t F l 8



# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII *continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12
Day	Mean Long.	A	B	C	D	E	F	G	H	I	J— <i>a</i>
	<sup>o</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
<b>July 30</b>	177°02337	6°52311	10°628	3°32	3°4895	3°5103	2°52	2°50	2°86	10°37	211°00
<b>31</b>	227°34101	0°47219	11°628	4°32	4°4895	4°5103	3°52	3°50	3°86	11°37	212°00
<b>Aug. 1</b>	277°65866	1°47219	0°105	5°32	5°4895	5°5103	4°52	4°50	4°86	12°37	213°00
<b>2</b>	327°97631	2°47219	1°105	6°32	6°4895	6°5103	5°52	5°50	5°86	13°37	214°00
<b>3</b>	18°29395	3°47219	2°105	0°16	0°3339	0°3555	6°52	6°50	6°86	14°37	215°00
<b>4</b>	68°61160	4°47219	3°105	1°16	1°3339	1°3555	0°57	0°55	0°68	15°37	216°00
<b>5</b>	118°92924	5°47219	4°105	2°16	2°3339	2°3555	1°57	1°55	1°68	16°37	217°00
<b>6</b>	169°24689	6°47219	5°105	3°16	3°3339	3°3555	2°57	2°55	2°68	17°37	218°00
<b>7</b>	219°56454	0°42126	6°105	4°16	4°3339	4°3555	3°57	3°55	3°68	18°37	219°00
<b>8</b>	269°88218	1°42126	7°105	5°16	5°3339	5°3555	4°57	4°55	4°68	19°37	220°00
<b>9</b>	320°19983	2°42126	8°105	6°16	6°3339	6°3555	5°57	5°55	5°68	20°37	221°00
<b>10</b>	10°51748	3°42126	9°105	0°00	0°1784	0°2007	6°57	6°55	6°68	21°37	222°00
<b>11</b>	60°83512	4°42126	10°105	1°00	1°1784	1°2007	0°62	0°60	0°51	22°37	223°00
<b>12</b>	111°15277	5°42126	11°105	2°00	2°1784	2°2007	1°62	1°60	1°51	23°37	224°00
<b>13</b>	161°47042	6°42126	12°105	3°00	3°1784	3°2007	2°62	2°60	2°51	24°37	225°00
<b>14</b>	211°78806	0°37033	0°582	4°00	4°1784	4°2007	3°62	3°60	3°51	25°37	226°00
<b>15</b>	262°10571	1°37033	1°582	5°00	5°1784	5°2007	4°62	4°60	4°51	26°37	227°00
<b>16</b>	312°42335	2°37033	2°582	6°00	6°1784	6°2007	5°62	5°60	5°51	27°37	228°00
<b>17</b>	2°74100	3°37033	3°582	7°00	0°0228	0°0459	6°62	6°60	6°51	28°37	229°00
<b>18</b>	53°05865	4°37033	4°582	0°84	1°0228	1°0459	0°67	0°65	0°33	29°37	230°00
<b>19</b>	103°37629	5°37033	5°582	1°84	2°0228	2°0459	1°67	1°65	1°33	30°37	231°00
<b>20</b>	153°69394	6°37033	6°582	2°84	3°0228	3°0459	2°67	2°65	2°33	31°37	232°00
<b>21</b>	204°01159	0°31940	7°582	3°84	4°0228	4°0459	3°67	3°65	3°33	32°37	233°00
<b>22</b>	254°32923	1°31940	8°582	4°84	5°0228	5°0459	4°67	4°65	4°33	33°37	234°00
<b>23</b>	304°64688	2°31940	9°582	5°84	6°0228	6°0459	5°67	5°65	5°33	34°37	235°00
<b>24</b>	354°96452	3°31940	10°582	6°84	7°0228	7°0459	6°67	6°65	6°33	35°37	236°00
<b>25</b>	45°28217	4°31940	11°582	0°68	0°8673	0°8910	0°72	0°70	0°15	36°37	237°00
<b>26</b>	95°59982	5°31940	0°058	1°68	1°8673	1°8910	1°72	1°70	1°15	37°37	238°00
<b>27</b>	145°91746	6°31940	1°058	2°68	2°8673	2°8910	2°72	2°70	2°15	38°37	239°00
<b>28</b>	196°23511	0°26848	2°058	3°68	3°8673	3°8910	3°72	3°70	3°15	39°37	240°00
<b>29</b>	246°55276	1°26848	3°058	4°68	4°8673	4°8910	4°72	4°70	4°15	40°37	241°00
<b>30</b>	296°87040	2°26848	4°058	5°68	5°8673	5°8910	5°72	5°70	5°15	41°37	242°00
<b>31</b>	347°18805	3°26848	5°058	6°68	6°8673	6°8910	6°72	6°70	6°15	42°37	243°00
<b>Sept. 1</b>	37°50569	4°26848	6°058	0°52	0°7118	0°7362	0°77	0°75	7°15	43°37	244°00
<b>2</b>	87°82334	5°26848	7°058	1°52	1°7118	1°7362	1°77	1°75	0°97	44°37	245°00
<b>3</b>	138°14099	6°26848	8°058	2°52	2°7118	2°7362	2°77	2°75	1°97	45°37	246°00
<b>4</b>	188°45863	0°21755	9°058	3°52	3°7118	3°7362	3°77	3°75	2°97	46°37	247°00
<b>5</b>	238°77628	1°21755	10°058	4°52	4°7118	4°7362	4°77	4°75	3°97	47°37	248°00
<b>6</b>	289°09393	2°21755	11°058	5°52	5°7118	5°7362	5°77	5°75	4°97	48°37	249°00
<b>7</b>	339°41157	3°21755	12°058	6°52	6°7118	6°7362	6°77	6°75	5°97	49°37	250°00
<b>8</b>	29°72922	4°21755	0°535	0°36	0°5562	0°5814	0°82	0°80	6°97	0°21	251°00
<b>9</b>	80°04687	5°21755	1°535	1°36	1°5562	1°5814	1°82	1°80	0°80	1°21	252°00
<b>10</b>	130°36451	6°21755	2°535	2°36	2°5562	2°5814	2°82	2°80	1°80	2°21	253°00
<b>11</b>	180°68216	0°16662	3°535	3°36	3°5562	3°5814	3°82	3°80	2°80	3°21	254°00
<b>12</b>	230°99980	1°16662	4°535	4°36	4°5562	4°5814	4°82	4°80	3°80	4°21	255°00
<b>13</b>	281°31745	2°16662	5°535	5°36	5°5562	5°5814	5°82	5°80	4°80	5°21	256°00
<b>14</b>	331°63510	3°16662	6°535	6°36	6°5562	6°5814	6°82	6°80	5°80	6°21	257°00
<b>15</b>	21°95274	4°16662	7°535	0°19	0°4007	0°4266	0°87	0°85	6°80	7°21	258°00
<b>16</b>	72°27039	5°16662	8°535	1°19	1°4007	1°4266	1°87	1°85	0°62	8°21	259°00
<b>17</b>	122°58804	6°16662	9°535	2°19	2°4007	2°4266	2°87	2°85	1°62	9°21	260°00
<b>18</b>	172°90568	0°11570	10°535	3°19	3°4007	3°4266	3°87	3°85	2°62	10°21	261°00
<b>19</b>	223°22333	1°11570	11°535	4°19	4°4007	4°4266	4°87	4°85	3°62	11°21	262°00

In Leap Year diminish the date in Columns 1, 13, by 1 day after Feb. 28.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII *continued*

Motions of Mean Longitude and the Arguments for Days

3	4	5	6	7	8	9			
Day	N	O	P	Q	R	S	T	U	V
					a			d	d
<b>July 30</b>	6	3 51797	0 I	3 532	3 5	3 5469	3 65	3 525	2 8
<b>31</b>	0 6	4 51797	I I	0 955	0 94	4 5469	4 65	4 5 5	3 8
<b>Aug 1</b>	6	5 51797	0 I	I 955	I 94	5 5469	5 65	5 525	4 8
<b>2</b>	0 6	6 51797	3 0 I	955	94	6 5469	6 65	6 5 5	5 8
<b>3</b>	0 6	0 36342	43	0 378	0 37	0 3933	0 50	0 37 I	6 8
<b>4</b>	0 6	1 3634	I 43	I 378	I 37	I 3933	I 50	I 37 I	0 7
<b>5</b>	6	2 3634	43	378	2 37	2 3933	50	37 I	I 7
<b>6</b>	0 6	3 36342	3 43	3 378	3 37	3 3933	3 50	3 37 I	2 7
<b>7</b>	0 6	4 36342	0 86	0 80 I	0 79	4 3933	4 50	4 37 I	3 7
<b>8</b>	0 6	5 3634	I 86	I 80 I	I 79	5 3933	5 50	5 37 I	4 7
<b>9</b>	6	6 36342	2 86	80 I	2 79	6 3933	6 50	6 37 I	5 7
<b>10</b>	0 6	0 0886	0 8	0 4	0 I	0 2398	0 35	0 I 7	6 7
<b>11</b>	6	I 886	I 28	I 4	I 2 I	I 2398	I 35	I I 7	0 5
<b>12</b>	0 6	2 0886	8	2 4	2 I	2 398	2 35	2 I 7	I 5
<b>13</b>	0 6	3 886	3 8	3 24	3 I	3 2398	3 35	3 2 I 7	5
<b>14</b>	0 6	4 0886	0 7	0 647	0 64	4 2398	4 35	4 2 I 7	3 5
<b>15</b>	0 6	5 0886	I 70	I 647	I 64	5 398	5 35	5 2 I 7	4 5
<b>16</b>	0 6	6 886	2 70	2 647	64	6 2398	6 35	6 2 I 7	5 5
<b>17</b>	0 6	0 0543 I	0 I 3	0 070	0 06	0 0862	0 20	0 062	6 5
<b>18</b>	0 6	I 0543 I	I I 3	I 070	I 06	I 0862	I 20	I 062	0 3
<b>19</b>	6	2 0543 I	I 3	2 070	06	2 0862	2 20	2 06	I 3
<b>20</b>	0 6	3 0543 I	3 I 3	3 070	3 06	3 0862	3 20	3 06	2 3
<b>21</b>	0 6	4 0543 I	0 55	0 493	0 48	4 0862	4 20	4 062	3 3
<b>22</b>	0 6	5 0543 I	I 55	I 493	I 48	5 0862	5 20	5 062	4 3
<b>23</b>	0 6	6 0543 I	55	493	2 48	6 0862	6 20	6 06	5 3
<b>24</b>	0 6	7 0543 I	3 55	3 493	3 48	7 0862	0 05	7 062	6 3
<b>25</b>	6	0 89976	0 98	0 916	0 90	0 93 7	I 05	0 908	0 I
<b>26</b>	0 7	I 89976	I 98	I 916	I 90	I 93 7	2 05	I 908	I I
<b>27</b>	7	2 89976	2 98	2 916	90	2 93 7	3 05	2 908	2 I
<b>28</b>	0 7	3 89976	0 40	0 339	0 33	3 93 7	4 05	3 908	3 I
<b>29</b>	0 7	4 89976	I 40	I 339	I 33	4 9327	5 05	4 908	4 I
<b>30</b>	0 7	5 89976	2 40	2 339	33	5 9327	6 5	5 908	5 I
<b>31</b>	0 7	6 89976	3 40	3 339	3 33	6 9327	7 05	6 908	6 I
<b>Sept 1</b>	0 7	0 745 I	0 82	0 76	0 75	0 779 I	0 90	0 754	7 I
<b>2</b>	0 7	I 745 I	I 8	I 762	I 75	I 779 I	I 90	I 754	0 9
<b>3</b>	0 7	745 I	2 82	76	2 75	2 779 I	2 90	2 754	I 9
<b>4</b>	0 7	3 7452 I	0 25	0 185	0 17	3 779 I	3 90	3 754	2 9
<b>5</b>	0 7	4 7452 I	I 25	I 185	I 17	4 779 I	4 90	4 754	3 9
<b>6</b>	7	5 745 I	25	185	17	5 779 I	5 90	5 754	4 9
<b>7</b>	7	6 745 I	3 5	3 185	3 17	6 779 I	6 90	6 754	5 9
<b>8</b>	0 7	0 59065	0 67	0 608	0 6	0 6 56	0 75	0 600	6 9
<b>9</b>	0 7	I 59065	I 67	I 608	I 60	I 6 56	I 75	I 6 0	0 8
<b>10</b>	0 7	59065	67	608	2 60	6256	75	2 600	I 8
<b>11</b>	0 7	3 59 65	0 I 0	0 03 I	0 02	3 6 56	3 75	3 600	2 8
<b>12</b>	0 7	4 59065	I I 0	I 03 I	I 0	4 6256	4 75	4 600	3 8
<b>13</b>	0 7	5 59065	2 I	03 I	02	5 6256	5 75	5 600	4 8
<b>14</b>	0 7	6 59065	3 I 0	3 3 I	3 02	6 6 56	6 75	6 600	5 8
<b>15</b>	0 7	0 436 I 0	0 5	0 454	0 44	0 4720	0 60	0 445	6 8
<b>16</b>	0 7	I 436 I 0	I 5	I 454	I 44	I 4720	I 60	I 445	0 6
<b>17</b>	0 7	436 I 0	2 5	2 454	2 44	47 0	2 60	2 445	I 6
<b>18</b>	0 7	3 436 I 0	3 52	3 454	3 44	3 47 0	3 60	3 445	2 6
<b>19</b>	0 7	4 436 I 0	0 94	0 877	0 86	4 4720	4 60	4 445	3 6

I L p Y d m i h t h d t i C l m 3 by d y a f t F b 8

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12
Day	Mean Long.	A	B	C	D	E	F	G	H	I	J— $\alpha$
	°	d	d	d	d	d	d	d	d	d	d
<b>Sept. 20</b>	273°54097	2°11570	0°012	5°19	5°4007	5°4266	5°87	5°85	4°62	12°21	263°00
<b>21</b>	323°85862	3°11570	1°012	6°19	6°4007	6°4266	6°87	6°85	5°62	13°21	264°00
<b>22</b>	14°17627	4°11570	2°012	0°03	0°2452	0°2718	0°93	0°90	6°62	14°21	265°00
<b>23</b>	64°49391	5°11570	3°012	1°03	1°2452	1°2718	1°93	1°90	0°44	15°21	266°00
<b>24</b>	114°81156	6°11570	4°012	2°03	2°2452	2°2718	2°93	2°90	1°44	16°21	267°00
<b>25</b>	165°12921	0°06477	5°012	3°03	3°2452	3°2718	3°93	3°90	2°44	17°21	268°00
<b>26</b>	215°44685	1°06477	6°012	4°03	4°2452	4°2718	4°93	4°90	3°44	18°21	269°00
<b>27</b>	265°76450	2°06477	7°012	5°03	5°2452	5°2718	5°93	5°90	4°44	19°21	270°00
<b>28</b>	316°08214	3°06477	8°012	6°03	6°2452	6°2718	6°93	6°90	5°44	20°21	271°00
<b>29</b>	6°39979	4°06477	9°012	7°03	0°0896	0°1169	0°98	0°95	6°44	21°21	272°00
<b>Oct. 30</b>	56°71744	5°06477	10°012	0°87	1°0896	1°1169	1°98	1°95	0°26	22°21	273°00
<b>1</b>	107°03508	6°06477	11°012	1°87	2°0896	2°1169	2°98	2°95	1°26	23°21	274°00
<b>2</b>	157°35273	0°01384	12°012	2°87	3°0896	3°1169	3°98	3°95	2°26	24°21	275°00
<b>3</b>	207°67038	1°01384	0°489	3°87	4°0896	4°1169	4°98	4°95	3°26	25°21	276°00
<b>4</b>	257°98802	2°01384	1°489	4°87	5°0896	5°1169	5°98	5°95	4°26	26°21	277°00
<b>5</b>	308°30567	3°01384	2°489	5°87	6°0896	6°1169	0°03	0°00	5°26	27°21	278°00
<b>6</b>	358°62331	4°01384	3°489	6°87	7°0896	7°1169	1°03	1°00	6°26	28°21	279°00
<b>7</b>	48°94096	5°01384	4°489	0°71	0°9341	0°9621	2°03	2°00	0°09	29°21	280°00
<b>8</b>	99°25861	6°01384	5°489	1°71	1°9341	1°9621	3°03	3°00	1°09	30°21	281°00
<b>9</b>	149°57625	7°01384	6°489	2°71	2°9341	2°9621	4°03	4°00	2°09	31°21	282°00
<b>10</b>	199°89390	0°96291	7°489	3°71	3°9341	3°9621	5°03	5°00	3°09	32°21	283°00
<b>11</b>	250°21155	1°96291	8°489	4°71	4°9341	4°9621	6°03	6°00	4°09	33°21	284°00
<b>12</b>	300°52919	2°96291	9°489	5°71	5°9341	5°9621	0°08	0°05	5°09	34°21	285°00
<b>13</b>	350°84684	3°96291	10°489	6°71	6°9341	6°9621	1°08	1°05	6°09	35°21	286°00
<b>14</b>	41°16449	4°96291	11°489	0°55	0°7786	0°8073	2°08	2°05	7°09	36°21	287°00
<b>15</b>	91°48213	5°96291	12°489	1°55	1°7786	1°8073	3°08	3°05	0°91	37°21	288°00
<b>16</b>	141°79978	6°96291	0°965	2°55	2°7786	2°8073	4°08	4°05	1°91	38°21	289°00
<b>17</b>	192°11742	0°91199	1°965	3°55	3°7786	3°8073	5°08	5°05	2°91	39°21	290°00
<b>18</b>	242°43507	1°91199	2°965	4°55	4°7786	4°8073	6°08	6°05	3°91	40°21	291°00
<b>19</b>	292°75272	2°91199	3°965	5°55	5°7786	5°8073	0°13	0°10	4°91	41°21	292°00
<b>20</b>	343°07036	3°91199	4°965	6°55	6°7786	6°8073	1°13	1°10	5°91	42°21	293°00
<b>21</b>	33°38801	4°91199	5°965	0°39	0°6230	0°6525	2°13	2°10	6°91	43°21	294°00
<b>22</b>	83°70566	5°91199	6°965	1°39	1°6230	1°6525	3°13	3°10	0°73	44°21	295°00
<b>23</b>	134°02330	6°91199	7°965	2°39	2°6230	2°6525	4°13	4°10	1°73	45°21	296°00
<b>24</b>	184°34095	0°86106	8°965	3°39	3°6230	3°6525	5°13	5°10	2°73	46°21	297°00
<b>25</b>	234°65859	1°86106	9°965	4°39	4°6230	4°6525	6°13	6°10	3°73	47°21	298°00
<b>26</b>	284°97624	2°86106	10°965	5°39	5°6230	5°6525	0°18	0°15	4°73	48°21	299°00
<b>27</b>	335°29389	3°86106	11°965	6°39	6°6230	6°6525	1°18	1°15	5°73	49°21	300°00
<b>28</b>	25°61153	4°86106	0°442	0°23	0°4675	0°4977	2°18	2°15	6°73	0°05	301°00
<b>29</b>	75°92918	5°86106	1°442	1°23	1°4675	1°4977	3°18	3°15	0°56	1°05	302°00
<b>30</b>	126°24683	6°86106	2°442	2°23	2°4675	2°4977	4°18	4°15	1°56	2°05	303°00
<b>31</b>	176°56447	0°81013	3°442	3°23	3°4675	3°4977	5°18	5°15	2°56	3°05	304°00
<b>Nov. 1</b>	226°88212	1°81013	4°442	4°23	4°4675	4°4977	6°18	6°15	3°56	4°05	305°00
<b>2</b>	277°19976	2°81013	5°442	5°23	5°4675	5°4977	0°23	0°20	4°56	5°05	306°00
<b>3</b>	327°51741	3°81013	6°442	6°23	6°4675	6°4977	1°23	1°20	5°56	6°05	307°00
<b>4</b>	17°83506	4°81013	7°442	0°07	0°3119	0°3429	2°23	2°20	6°56	7°05	308°00
<b>5</b>	68°15270	5°81013	8°442	1°07	1°3119	1°3429	3°23	3°20	0°38	8°05	309°00
<b>6</b>	118°47035	6°81013	9°442	2°07	2°3119	2°3429	4°23	4°20	1°38	9°05	310°00
<b>7</b>	168°78800	0°75921	10°442	3°07	3°3119	3°3429	5°23	5°20	2°38	10°05	311°00
<b>8</b>	219°10564	1°75921	11°442	4°07	4°3119	4°3429	6°23	6°20	3°38	11°05	312°00
<b>9</b>	269°42329	2°75921	12°442	5°07	5°3119	5°3429	0°28	0°25	4°38	12°05	313°00
<b>10</b>	319°74094	3°75921	0°919	6°07	6°3119	6°3429	1°28	1°25	5°38	13°05	314°00

In Leap Year diminish the date in Columns 1, 13, by 1 day after Feb. 28.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued

Motions of Mean Longitude and the Arguments for Days

3	4	5	6	7	8	9			
Day	N	O	P	Q	R	S	T	U	V
<b>Sept 20</b>	7	a 5 4361	1 94	1 877	1 86	5 47 0	5 60	5 445	4 6
<b>21</b>	7	6 4361	94	877	86	6 47 0	6 60	6 445	5 6
<b>22</b>	7	0 8155	37	0 300	0 9	0 3184	0 45	0 91	6 6
<b>23</b>	0 7	1 8155	1 37	1 3	1 29	1 3184	1 45	1 91	0 4
<b>24</b>	0 7	8155	37	2 300	9	3184	45	2 91	1 4
<b>25</b>	0 7	3 8155	3 37	3 300	3 29	3 3184	3 45	3 91	2 4
<b>26</b>	0 7	4 8155	79	0 7 3	0 71	4 3184	4 45	4 91	3 4
<b>27</b>	0 7	5 8155	1 79	1 7 3	1 71	5 3184	5 45	5 91	4 4
<b>28</b>	0 7	6 8155	79	2 7 3	71	6 3184	6 45	6 91	5 4
<b>29</b>	0 7	0 1 699	0 2	0 146	0 13	0 1649	0 30	0 137	6 4
<b>30</b>	7	1 1 699	1	1 146	1 13	1 1649	1 30	1 137	0 2
<b>Oct 1</b>	0 8	1 699		2 146	13	2 1649	2 30	2 137	1
<b>2</b>	0 8	3 1 699	3 2	3 146	3 13	3 1649	3 30	3 137	2
<b>3</b>	0 8	4 1 699	0 64	0 56)	0 55	4 1649	4 30	4 137	3 2
<b>4</b>	0 8	5 1 699	1 64	1 569	1 55	5 1649	5 30	5 137	4 2
<b>5</b>	0 8	6 1 699	64	569	55	6 1649	6 30	6 137	5 2
<b>6</b>	0 8	7 1 699	0 06	3 569	3 55	0 0113	0 15	7 137	6 2
<b>7</b>	0 8	97244	1 06	0 992	0 98	1 0113	1 15	0 982	0 0
<b>8</b>	0 8	1 97 44	2 06	1 99	1 98	2 0113	2 15	1 982	1 0
<b>9</b>	0 8	97 44	3 06	992	2 98	3 0113	3 15	982	2 0
<b>10</b>	0 8	3 97 44	0 49	0 415	0 40	4 113	4 15	3 98	3 0
<b>11</b>	8	4 97 44	1 49	1 415	1 40	5 0113	5 15	4 982	4 0
<b>12</b>	8	5 97 44	49	2 415	2 40	6 113	6 15	5 98	5 0
<b>13</b>	0 8	6 97 44	3 49	3 415	3 4	7 0113	0 00	6 982	6 0
<b>14</b>	8	81789	0 91	0 838	82	0 8578	1 00	8 8	7 0
<b>15</b>	0 8	1 81789	1 91	1 838	1 82	1 8578	00	1 828	0 9
<b>16</b>	0 8	2 81789	91	838	82	8578	3 0	8 8	1 9
<b>17</b>	8	3 81789	0 33	0 261	0 25	3 8578	4 00	3 8 8	2 9
<b>18</b>	8	4 8 789	1 33	1 61	1 25	4 8578	5 00	4 8 8	3 9
<b>19</b>	8	5 81789	33	61	2 25	5 8578	6 00	5 828	4 9
<b>20</b>	0 8	6 81789	3 33	3 261	3 25	6 8578	7 0	6 828	5 9
<b>21</b>	0 8	66334	0 76	0 684	0 67	0 7042	0 85	0 674	6 9
<b>22</b>	0 8	1 66334	1 76	1 684	1 67	1 7042	1 85	1 674	0 7
<b>23</b>	0 8	66334	76	684	2 67	7042	2 85	2 674	1 7
<b>24</b>	8	3 66334	0 18	0 107	0 9	3 042	3 85	3 674	2 7
<b>25</b>	0 8	4 66334	1 18	1 107	1 09	4 7042	4 85	4 674	3 7
<b>26</b>	0 8	5 66334	2 18	1 7	2 9	5 7 42	5 85	5 674	4 7
<b>27</b>	0 8	6 66334	3 18	3 1 7	3 09	6 704	6 85	6 674	5 7
<b>28</b>	8	5 878	0 61	0 53	0 51	5507	0 70	0 519	6 7
<b>29</b>	0 8	1 50878	1 61	1 530	1 51	1 5507	1 70	1 519	0 5
<b>30</b>	8	5 878	61	53	51	2 5507	70	2 519	1 5
<b>Nov 31</b>	0 8	3 50878	0 3	3 530	3 51	3 5507	3 70	3 519	2 5
<b>1</b>	8	4 50878	1 03	0 953	94	4 55 7	4 70	4 519	3 5
<b>2</b>	0 8	5 50878	2 3	1 953	1 94	5 5507	5 70	5 519	4 5
<b>3</b>	8	6 50878	3 03	953	2 94	6 55 7	6 70	6 519	5 5
<b>4</b>	0 8	0 35423	0 45	0 376	0 36	0 3971	0 55	0 365	6 5
<b>5</b>	0 8	1 35423	1 45	1 376	1 36	1 3971	1 55	1 365	0 3
<b>6</b>	0 8	2 354 3	45	2 376	36	3971	2 55	365	1 3
<b>7</b>	0 9	3 354 3	3 45	3 376	3 36	3 3971	3 55	3 365	2 3
<b>8</b>	0 9	4 354 3	0 88	0 799	0 78	4 3971	4 55	4 365	3 3
<b>9</b>	0 9	5 35423	1 88	1 799	1 78	5 3971	5 55	5 365	4 3
<b>10</b>	0 9	6 354 3	2 88	2 799	78	6 3971	6 55	6 365	5 3

I L p Y d m i h t h d t C l m g b y d y f t F b 8

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11	12
Day	Mean Long.	A	B	C	D	E	F	G	H	I	J— $\alpha$
	<sup>o</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
<b>Nov. 11</b>	10°05858	4°75921	1°919	7°07	0°1564	0°1880	2°28	2°25	6°38	14°05	315°00
<b>12</b>	60°37623	5°75921	2°919	0°90	1°1564	1°1880	3°28	3°25	0°20	15°05	316°00
<b>13</b>	110°69387	6°75921	3°919	1°90	2°1564	2°1880	4°28	4°25	1°20	16°05	317°00
<b>14</b>	161°01152	0°70828	4°919	2°90	3°1564	3°1880	5°28	5°25	2°20	17°05	318°00
<b>15</b>	211°32917	1°70828	5°919	3°90	4°1564	4°1880	6°28	6°25	3°20	18°05	319°00
<b>16</b>	261°64681	2°70828	6°919	4°90	5°1564	5°1880	0°33	0°30	4°20	19°05	320°00
<b>17</b>	311°96446	3°70828	7°919	5°90	6°1564	6°1880	1°33	1°30	5°20	20°05	321°00
<b>18</b>	2°28211	4°70828	8°919	6°90	0°0009	0°0332	2°33	2°30	6°20	21°05	322°00
<b>19</b>	52°59975	5°70828	9°919	0°74	1°0009	1°0332	3°33	3°30	0°02	22°05	323°00
<b>20</b>	102°91740	6°70828	10°919	1°74	2°0009	2°0332	4°33	4°30	1°02	23°05	324°00
<b>21</b>	153°23504	0°65735	11°919	2°74	3°0009	3°0332	5°33	5°30	2°02	24°05	325°00
<b>22</b>	203°55269	1°65735	0°396	3°74	4°0009	4°0332	6°33	6°30	3°02	25°05	326°00
<b>23</b>	253°87034	2°65735	1°396	4°74	5°0009	5°0332	0°38	0°35	4°02	26°05	327°00
<b>24</b>	304°18798	3°65735	2°396	5°74	6°0009	6°0332	1°38	1°35	5°02	27°05	328°00
<b>25</b>	354°50563	4°65735	3°396	6°74	7°0009	7°0332	2°38	2°35	6°02	28°05	329°00
<b>26</b>	44°82328	5°65735	4°396	0°58	0°8453	0°8784	3°38	3°35	7°02	29°05	330°00
<b>27</b>	95°14092	6°65735	5°396	1°58	1°8453	1°8784	4°38	4°35	0°85	30°05	331°00
<b>28</b>	145°45857	0°60642	6°396	2°58	2°8453	2°8784	5°38	5°35	1°85	31°05	332°00
<b>29</b>	195°77621	1°60642	7°396	3°58	3°8453	3°8784	6°38	6°35	2°85	32°05	333°00
<b>30</b>	246°09386	2°60642	8°396	4°58	4°8453	4°8784	0°43	0°40	3°85	33°05	334°00
<b>Dec. 1</b>	296°41151	3°60642	9°396	5°58	5°8453	5°8784	1°43	1°40	4°85	34°05	335°00
<b>2</b>	346°72915	4°60642	10°396	6°58	6°8453	6°8784	2°43	2°40	5°85	35°05	336°00
<b>3</b>	37°04680	5°60642	11°396	0°42	0°6898	0°7236	3°43	3°40	6°85	36°05	337°00
<b>4</b>	87°36445	6°60642	12°396	1°42	1°6898	1°7236	4°43	4°40	0°67	37°05	338°00
<b>5</b>	137°68210	0°55550	0°872	2°42	2°6898	2°7236	5°43	5°40	1°67	38°05	339°00
<b>6</b>	187°99974	1°55550	1°872	3°42	3°6898	3°7236	6°43	6°40	2°67	39°05	340°00
<b>7</b>	238°31738	2°55550	2°872	4°42	4°6898	4°7236	0°48	0°45	3°67	40°05	341°00
<b>8</b>	288°63503	3°55550	3°872	5°42	5°6898	5°7236	1°48	1°45	4°67	41°05	342°00
<b>9</b>	338°95268	4°55550	4°872	6°42	6°6898	6°7236	2°48	2°45	5°67	42°05	343°00
<b>10</b>	29°27032	5°55550	5°872	0°26	0°5343	0°5688	3°48	3°45	6°67	43°05	344°00
<b>11</b>	79°58797	6°55550	6°872	1°26	1°5343	1°5688	4°48	4°45	0°49	44°05	345°00
<b>12</b>	129°90562	0°50457	7°872	2°26	2°5343	2°5688	5°48	5°45	1°49	45°05	346°00
<b>13</b>	180°22326	1°50457	8°872	3°26	3°5343	3°5688	6°48	6°45	2°49	46°05	347°00
<b>14</b>	230°54091	2°50457	9°872	4°26	4°5343	4°5688	0°53	0°50	3°49	47°05	348°00
<b>15</b>	280°85856	3°50457	10°872	5°26	5°5343	5°5688	1°53	1°50	4°49	48°05	349°00
<b>16</b>	331°17620	4°50457	11°872	6°26	6°5343	6°5688	2°53	2°50	5°49	49°05	350°00
<b>17</b>	21°49385	5°50457	0°349	0°10	0°3787	0°4139	3°53	3°50	6°49	50°05	351°00
<b>18</b>	71°81149	6°50457	1°349	1°10	1°3787	1°4139	4°53	4°50	0°31	0°89	352°00
<b>19</b>	122°12914	0°45364	2°349	2°10	2°3787	2°4139	5°53	5°50	1°31	1°89	353°00
<b>20</b>	172°44679	1°45364	3°349	3°10	3°3787	3°4139	6°53	6°50	2°31	2°89	354°00
<b>21</b>	222°76443	2°45364	4°349	4°10	4°3787	4°4139	0°58	0°55	3°31	3°89	355°00
<b>22</b>	273°08208	3°45364	5°349	5°10	5°3787	5°4139	1°58	1°55	4°31	4°89	356°00
<b>23</b>	323°39973	4°45364	6°349	6°10	6°3787	6°4139	2°58	2°55	5°31	5°89	357°00
<b>24</b>	13°71737	5°45364	7°349	7°10	0°2232	0°2591	3°58	3°55	6°31	6°89	358°00
<b>25</b>	64°03502	6°45364	8°349	0°94	1°2232	1°2591	4°58	4°55	0°14	7°89	359°00
<b>26</b>	114°35266	0°40272	9°349	1°94	2°2232	2°2591	5°58	5°55	1°14	8°89	360°00
<b>27</b>	164°67031	1°40272	10°349	2°94	3°2232	3°2591	6°58	6°55	2°14	9°89	361°00
<b>28</b>	214°98796	2°40272	11°349	3°94	4°2232	4°2591	0°63	0°60	3°14	10°89	362°00
<b>29</b>	265°30560	3°40272	12°349	4°94	5°2232	5°2591	1°63	1°60	4°14	11°89	363°00
<b>30</b>	315°62325	4°40272	0°826	5°94	6°2232	6°2591	2°63	2°60	5°14	12°89	364°00
<b>31</b>	5°94090	5°40272	1°826	6°94	0°0677	0°1043	3°63	3°60	6°14	13°89	365°00
<b>32</b>	56°25854	6°40272	2°826	0°78	1°0677	1°1043	4°63	4°60	7°14	14°89	366°00

In Leap Year diminish the date in Columns 1, 13, by 1 day after Feb. 28

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XII continued

Motions of Mean Longitude and the Arguments for Days

3	4	5	6	7	8	9			
D y	N	O	P	Q	R	S	T	U	V
<b>Nov</b>		d			d	d			
11	9	0 19968	0 30	0	21	435	0 40	0 211	6 3
12	9	1 19968	1 3	1	1 1	1 435	1 4	1 11	0
13	09	19968	3		1	435	4	2 11	1
14	09	3 19968	3 30	3	3 21	3 435	3 40	3 211	2
15	09	4 19968	0 73	0 645	63	4 435	4 40	4 211	3
16	09	5 19968	1 73	1 645	1 63	5 2435	5 40	5 11	4
17	9	6 19968	2 73	2 645	2 63	6 435	6 40	6 11	5 2
18	09	0 0451	0 15	0 068	0 05	0 0900	0 5	0 057	6
19	09	1 451	1 15	1 068	1 05	1 0900	1 25	1 057	0 0
20	09	2 04512	2 15	0 68	2 5	2 090	2 5	2 57	1 0
21	09	3 451	3 15	3 68	3 05	3 0900	3 25	3 057	2 0
22	09	4 4512	0 57	0 491	0 47	4 90	4 25	4 057	3 0
23	09	5 0451	1 57	1 491	1 47	5 9 0	5 5	5 57	4 0
24	9	6 451	57	2 491	47	6 0900	6 5	6 057	5 0
25	09	7 0451	0 00	3 491	3 47	7 09 0	0 10	7 57	6 0
26	09	89 57	1 0	0 914	0 90	0 9364	1 10	0 902	7 0
27	9	1 89057	0	1 914	1 90	1 9364	10	1 9	0 8
28	09	89 57	3 00	914	90	2 9364	3 10	2 9 2	1 8
29	9	3 89 57	0 4	0 336	0 3	3 9364	4 10	3 902	2 8
30	09	4 89 57	1 4	1 336	1 3	4 9364	5 10	4 902	3 8
<b>Dec</b>									
1	9	5 89057	42	336	32	5 9364	6 10	5 90	4 8
2	09	6 89057	3 42	3 336	3 32	6 9364	7 10	6 9 2	5 8
3	9	0 7360	0 85	0 759	74	0 78 9	0 95	0 748	6 8
4	09	1 73602	1 85	1 759	1 74	1 78 9	1 95	1 748	0 6
5	09	2 736	85	2 759	74	2 7829	2 95	2 748	1 6
6	09	3 736	0 7	0 182	0 16	3 78 9	3 95	3 748	2 6
7	9	4 736	1 7	1 18	1 16	4 78 9	4 95	4 748	3 6
8	09	5 7360	2 7	18	16	5 78 9	5 95	5 748	4 6
9	09	6 736	3 27	3 18	3 16	6 7829	6 95	6 748	5 6
10	09	58147	0 69	0 6 5	0 59	0 6 93	0 80	0 594	6 6
11	09	1 58147	1 69	1 605	1 59	1 6293	1 8	1 594	0 4
12	09	2 58147	69	2 605	59	6293	2 80	2 594	1 4
13	10	3 58147	1	0 8	0 01	3 6 93	3 80	3 594	4
14	10	4 58147	1 1	1 0 8	1 01	4 6293	4 80	4 594	3 4
15	1	5 58147	1	028	01	5 6 93	5 80	5 594	4 4
16	10	6 58147	3 1	3 028	3 01	6 6 93	6 80	6 594	5 4
17	1	4 691	0 54	451	0 43	0 4758	0 65	0 439	6 4
18	1	1 4 691	1 54	1 451	1 43	1 4758	1 65	1 439	0 3
19	10	4 691	54	451	43	2 4758	2 65	2 439	1 3
20	10	3 42691	3 54	3 451	3 43	3 4758	3 65	3 439	2 3
21	10	4 4 691	0 96	0 874	0 86	4 4758	4 65	4 439	3 3
22	10	5 4 691	1 96	1 874	1 86	5 4758	5 65	5 439	4 3
23	1	6 4 691	96	874	2 86	6 4758	6 65	6 439	5 3
24	1	0 7 36	0 39	0 97	0 28	0 322	0 5	0 285	6 3
25	10	1 7 36	1 39	1 297	1 8	1 32 2	1 5	1 85	0 1
26	10	7 36	39	97	28	2 32	2 50	2 285	1 1
27	1	3 7 36	3 39	3 97	3 8	3 3 2	3 50	3 285	2 1
28	1	4 7 36	0 81	7 0	0 70	4 32	4 5	4 85	3 1
29	10	5 7 36	1 81	1 7	1 70	5 322	5 50	5 285	4 1
30	10	6 7 36	81	72	2 70	6 3 2	6 50	6 285	5 1
31	10	0 11781	4	143	0 12	0 1687	0 36	0 131	6 1
32	10	1 11781	1 4	1 143	1 1	1 1687	1 36	1 131	7 1

I L p Y dimin h th d t i O l m by d y ft F b 8

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XIII

Motion of Mean Longitude for Parts of a Day

1	2	1	2
Days	Mean Long.	Days	Mean Long.
d	°	d	°
0.00	0.00000	0.50	25.15882
.01	0.50318	.51	25.66200
.02	1.00635	.52	26.16518
.03	1.50953	.53	26.66835
.04	2.01271	.54	27.17153
.05	2.51588	.55	27.67471
0.06	3.01906	0.56	28.17788
.07	3.52224	.57	28.68106
.08	4.02541	.58	29.18423
.09	4.52859	.59	29.68741
.10	5.03176	.60	30.19059
0.11	5.53494	0.61	30.69376
.12	6.03812	.62	31.19694
.13	6.54129	.63	31.70012
.14	7.04447	.64	32.20329
.15	7.54765	.65	32.70647
0.16	8.05082	0.66	33.20965
.17	8.55400	.67	33.71282
.18	9.05718	.68	34.21600
.19	9.56035	.69	34.71918
.20	10.06353	.70	35.22235
0.21	10.56671	0.71	35.72553
.22	11.06988	.72	36.22871
.23	11.57306	.73	36.73188
.24	12.07624	.74	37.23506
.25	12.57941	.75	37.73823
0.26	13.08259	0.76	38.24141
.27	13.58576	.77	38.74459
.28	14.08894	.78	39.24776
.29	14.59212	.79	39.75094
.30	15.09529	.80	40.25412
0.31	15.59847	0.81	40.75729
.32	16.10165	.82	41.26047
.33	16.60482	.83	41.76365
.34	17.10800	.84	42.26682
.35	17.61118	.85	42.77000
0.36	18.11435	0.86	43.27318
.37	18.61753	.87	43.77635
.38	19.12071	.88	44.27953
.39	19.62388	.89	44.78271
.40	20.12706	.90	45.28588
0.41	20.63023	0.91	45.78906
.42	21.13341	.92	46.29223
.43	21.63659	.93	46.79541
.44	22.13976	.94	47.29859
.45	22.64294	.95	47.80176
0.46	23.14612	0.96	48.30494
.47	23.64929	.97	48.80812
.48	24.15247	.98	49.31129
.49	24.65565	.99	49.81447
.50	25.15882	1.00	50.31765

3	4	3	4
Days	Mean Long.	Days	Mean Long.
d	°	d	°
0.0000	0.00000	0.0050	0.25159
1	503	51	.25662
2	1006	52	.26165
3	1509	53	.26668
4	2013	54	.27172
5	2516	55	.27675
0.0006	0.03019	0.0056	0.28178
7	3522	57	.28681
8	4025	58	.29184
9	4529	59	.29687
10	5032	60	.30191
0.0011	0.05535	0.0061	0.30694
12	6038	62	.31197
13	6541	63	.31700
14	7044	64	.32203
15	7548	65	.32706
0.0016	0.08051	0.0066	0.33210
17	8554	67	.33713
18	9057	68	.34216
19	9560	69	.34719
20	10064	70	.35222
0.0021	0.10567	0.0071	0.35726
22	11070	72	.36229
23	11573	73	.36732
24	12076	74	.37235
25	12579	75	.37738
0.0026	0.13083	0.0076	0.38241
27	13586	77	.38745
28	14089	78	.39248
29	14592	79	.39751
30	15095	80	.40254
0.0031	0.15598	0.0081	0.40757
32	16102	82	.41260
33	16605	83	.41764
34	17108	84	.42267
35	17611	85	.42770
0.0036	0.18114	0.0086	0.43273
37	18618	87	.43776
38	19121	88	.44280
39	19624	89	.44783
40	20127	90	.45286
0.0041	0.20630	0.0091	0.45789
42	21133	92	.46292
43	21637	93	.46795
44	22140	94	.47299
45	22643	95	.47802
0.0046	0.23146	0.0096	0.48305
47	23649	97	.48808
48	24152	98	.49311
49	24656	99	.49814
50	0.25159	0.0100	0.50318

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XIV

Equation of Longitude

Argument A

A	Equation	3		A	Equation	3		A	Equation	3		A	Equation	3	
		$\Delta$	$\frac{1}{2} \Delta^2$			$\Delta$	$\frac{1}{2} \Delta^2$			$\Delta$	$\frac{1}{2} \Delta^2$			$\Delta$	$\frac{1}{2} \Delta^2$
0 00	0 07000	- 67 0	0 0	2 00	0 00396	+ 1 8	+ 0 4	4 00	0 09857	+ 55 8	- 1	6 00	1 690	- 33 0	- 0 2
04	6731	66 8	0	04	449	14 5	3	04	10078	54 8	1	04	1 555	34 5	0 2
08	6463	66 8	+ 1	08	511	16 3	0 1	08	10 95	53 5	0	08	12412	36 8	0 1
12	6196	66 8	+ 0 1	12	580	18 3	0 1	12	105 6	5 5	0 0	12	1 262	38 5	2
16	5931	66	0 0	16	656	20 0	0	16	1 713	51 0	- 0	16	12104	40 5	0 3
20	5667	65 5	+ 0	20	74	1 8	0 1	20	10914	49 5	- 0	20	11939	42 3	0 4
0 24	0 54 7	- 65 0	+ 0 1	2 24	0 0830	+ 23 5	+ 0	4 24	0 11108	+ 48 0	0 0	6 24	0 11766	- 44 0	- 0 2
28	5150	63 9	0 1	28	9 8	25 3	1	28	11 98	46 5	- 0	28	11586	46 0	0 2
32	4897	63	0 1	32	1033	27 3	0 1	32	11481	45 0	0 3	32	11399	47 8	0 4
36	4648	61 8	1	36	1145	29 0	0 2	36	11657	43 0	0	36	11 04	49 3	0 1
40	4403	60 5	0	40	1 64	30 5	+ 0 2	40	118 7	4 0	3	40	11 03	51 3	0 1
0 44	0 04164	- 59 3	+ 1	2 44	0 01391	+ 32 5	0	4 44	0 11990	+ 39 8	- 0 1	6 44	0 10796	- 52 8	- 0 4
48	3930	58		48	15 4	34 3	+ 0 1	48	1 146	38 3	0 1	48	1 581	54 5	3
52	3701	56 3	+ 1	52	1665	36	0 0	52	1 296	37 0	0 5	52	10360	55 8	- 0 1
56	3479	54 8	1	56	181	37 8	+ 0 1	56	1 438	34 8	0 1	56	10133	57 5	0 0
60	3 63	53 3	0 1	60	1966	39 5	0	60	12574	33 0	0	60	9901	59 0	- 0 2
0 64	0 03053	- 51 8	+ 0 1	2 64	0 0 1 8	+ 41 3	+ 0 1	4 64	0 1 702	+ 31 0	- 0 2	6 64	0 09663	- 60	- 0 2
68	850	50	0 1	68	2296	4 8	+ 1	68	1 8 3	9 5	0	68	9419	61 5	0 0
72	653	48	0 4	72	2471	44 5	0	72	1 937	7 8	- 0 1	72	917	62 5	- 0 2
76	2464	46 8	0 4	76	65	46 3	+ 0 1	76	13044	26 0	0 0	76	8919	63 5	0 0
80	2 8	44 5	3	80	839	47 0		80	13144	23 8	- 0 1	80	8663	64 5	0 0
0 84	0 0 108	- 4 8	+ 0 1	2 84	0 0303	+ 49 0	+	4 84	0 13 36	+ 22 3	- 0 1	6 84	0 08404	- 65 3	- 0 1
88	1940	41 0	0 3	88	3 32	50 5	0	88	133	0 5	0	88	814	65 8	- 0 1
92	1780	39 0	0 3	92	3437	52 0	0	92	13400	18 8	0 1	92	7877	66 5	0 0
96	16 8	37 0	3	96	3647	53 3	+ 1	96	13471	16 8	0 1	96	7610	67 0	0 0
1 00	1483	35 3	0 4	3 00	386	54 3	0 1	5 00	13535	15 0	0	7 00	7342	67 0	0
1 04	0 1346	- 33 5	+ 0 3	3 04	0 0408	+ 55 8	+ 1	5 04	0 1359	+ 13 3	- 0 4	7 04	0 07073	- 67 3	+ 0 1
08	1217	31 3	0 1	08	43 6	56 5	+ 0	08	13641	11 5	0	08	6804	67 3	+ 0 1
12	1095	29 5	0 3	12	4535	57 5	0 0	12	13683	9 8	0 1	12	6536	67 0	0 0
16	98	7 3	0 1	16	4767	58 8	+ 1	16	13719	7 5	0 5	16	6 69	66 5	0 0
20	875	5 5	0 5	20	5 03	59 3	0 1	20	13746	6 3	0 4	20	6003	66 3	+ 1
1 24	0 0 778	- 3 8	+ 1	3 24	0 05241	+ 60 0	+ 0 2	5 24	0 13766	+ 4 3	- 1	7 24	0 5739	- 65 8	+ 0 1
28	688	1 5	0 0	28	5483	60 5	0	28	13779	0		28	5478	65 0	0 0
32	6 5	19 5	+ 0	32	57 6	61 3	+ 0 1	32	13785	+ 0 8	0 4	32	52 0	64 0	0
36	531	17 5	0 3	36	597	61 5	0	36	13783	- 1 5	0 3	36	4966	63 0	0
40	465	15 8	0 1	40	62 9	62		40	13773	3 5	0 3	40	4715	62 0	+ 0
1 44	0 004 6	- 13 5	+ 2	3 44	0 06467	+ 6 3	+ 0 1	5 44	0 13755	- 5 3	- 0 3	7 44	0 04469	- 61 0	+ 0
48	356	1 8	0 1	48	6716	6 3	+ 0 1	48	13731	7 3	0 4	48	4 9	59 5	0 0
52	313	9 8	0 1	52	6966	6 5		52	13698	9 3	0 4	52	3993	58 3	+ 1
56	78	7 8	0 1	56	7 5	6 3	+ 1	56	13657	11	0 3	56	3763	56 8	1
60	5	5 8	4	60	7465	62 3	- 0 1	60	13609	13 3	0 4	60	3539	55 3	0 1
1 64	0 00 31	- 4 0	+ 0 3	3 64	0 7713	+ 61 8	- 0 1	5 64	0 13552	- 15 0	- 0 3	7 64	0 03321	- 54 3	+ 0 1
68	19	0	0 3	68	7961	62	- 0 2	68	13488	17	0 3	68	3109	52 0	0 2
72	215	0	0 3	72	8 7	61 5	0 0	72	13416	19 0	3	72	905	5 3	0 1
76	18	+ 1 8	4	76	8451	60 8	- 1	76	13336	20 5	0 5	76	2707	48 8	0 1
80	2 9	3 8	0 4	80	8693	60 3	- 1	80	13 48	23	0	80	2515	47 0	0
1 84	0 0 248	+ 5 5	+ 0 3	3 84	0 0893	+ 59 5	0 0	5 84	0 13152	- 5 0	- 0 2	7 84	0 02331	- 45 0	+ 0 2
88	73	7 3	4	88	9170	58 8	- 4	88	13048	6 8	1	88	155	43 3	0 1
92	306	9 3	0 4	92	9402	57 8	1	92	1 937	9	0	92	1985	41 5	0
96	347	11 0	0 3	96	963	57 0		96	1 817	3 8	0 1	96	1823	39 5	0
2 00	0 396	+ 1 8	+ 0 4	4 00	0 9857	+ 55 8	- 0 1	6 00	0 12690	- 33 0	- 0	8 00	0 01669	- 37 5	+ 0



# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

**XV**

Equations of Longitude

1	2	3	4	1	2	3	4	1	2	3	4
B	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$	B	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$	B	Equa- tion	$\Delta$	$\frac{1}{2}\Delta^2$
d 0.0	0.02000	+ 148	0	d 5.0	0.00430	+ 64	+ 7	d 10.0	0.01654	- 136	+ 3
.1	2148	147	- 1	.1	501	77	6	.1	1521	130	3
.2	2293	143	2	.2	584	89	6	.2	1394	123	4
.3	2434	138	3	.3	679	101	6	.3	1275	115	5
.4	2569	131	4	.4	785	111	5	.4	1165	105	5
.5	2696	123	5	.5	901	121	5	.5	1065	94	6
0.6	0.02814	+ 112	- 6	5.6	0.01026	+ 129	+ 4	10.6	0.00977	- 82	+ 6
.7	2920	100	6	.7	1159	137	4	.7	901	70	7
.8	3014	87	7	.8	1299	143	3	.8	838	56	7
.9	3094	73	7	.9	1445	148	2	.9	789	41	8
1.0	3160	58	8	6.0	1595	152	2	11.0	756	26	8
1.1	0.03210	+ 42	- 8	6.1	0.01748	+ 154	+ 1	11.1	0.00738	- 10	+ 8
.2	3244	26	8	.2	1903	156	+ 1	.2	736	+ 7	9
.3	3262	+ 10	8	.3	2060	157	- 1	.3	751	23	8
.4	3264	- 7	9	.4	2216	155	1	.4	781	38	8
.5	3249	23	8	.5	2370	153	2	.5	827	54	8
1.6	0.03219	- 38	- 8	6.6	0.02521	+ 149	- 2	11.6	0.00889	+ 70	+ 8
.7	3174	52	7	.7	2668	144	3	.7	966	84	7
.8	3115	66	7	.8	2809	138	4	.8	1057	97	6
.9	3042	80	7	.9	2943	131	4	.9	1160	109	6
2.0	2956	92	6	7.0	3070	123	4	12.0	1275	120	5
2.1	0.02859	- 103	- 6	7.1	0.03189	+ 114	- 5	12.1	0.01400	+ 130	+ 5
.2	2751	113	5	.2	3297	103	6	.2	1534	137	3
.3	2634	121	4	.3	3394	92	6	.3	1674	143	3
.4	2509	129	3	.4	3480	80	6	.4	1819	146	+ 1
.5	2377	135	3	.5	3554	68	7	.5	1966	147	0
2.6	0.02240	- 139	- 2	7.6	0.03615	+ 54	- 7	12.6	0.02113	+ 147	- 1
.7	2099	143	2	.7	3662	41	7	.7	2259	145	2
.8	1955	145	- 1	.8	3696	27	8	.8	2402	140	3
.9	1809	146	0	.9	3715	+ 12	7	.9	2539	133	4
3.0	1663	145	+ 1	8.0	3720	- 2	7	13.0	2668	125	5
3.1	0.01519	- 143	+ 1	8.1	0.03711	- 16	- 7	13.1	0.02788	+ 115	- 6
.2	1377	140	2	.2	3688	30	7	.2	2897	103	6
.3	1239	135	3	.3	3651	44	7	.3	2994	90	7
.4	1107	130	3	.4	3600	58	7	.4	3077	76	7
.5	980	123	4	.5	3536	70	6	.5	3146	61	8
3.6	0.00861	- 115	+ 5	8.6	0.03460	- 82	- 6	13.6	0.03199	+ 46	- 8
.7	751	106	5	.7	3372	94	6	.7	3237	30	8
.8	650	96	6	.8	3273	104	5	.8	3259	+ 14	9
.9	560	85	6	.9	3165	113	5	.9	3264	- 3	8
4.0	481	73	7	9.0	3048	121	4	14.0	3254	18	8
4.1	0.00414	- 61	+ 7	9.1	0.02923	- 128	- 3	14.1	0.03228	- 34	- 8
.2	360	47	7	.2	2792	134	3	.2	3186	49	7
.3	320	34	7	.3	2655	139	2	.3	3130	63	7
.4	293	20	8	.4	2514	143	2	.4	3060	77	7
.5	281	- 6	7	.5	2370	145	1	.5	2977	89	6
4.6	0.00282	+ 9	+ 8	9.6	0.02225	- 146	- 1	14.6	0.02882	- 100	- 5
.7	298	24	8	.7	2079	145	+ 1	.7	2777	110	5
.8	329	38	7	.8	1935	143	1	.8	2662	119	4
.9	373	51	7	.9	1793	141	2	.9	2539	127	4
5.0	0.00430	+ 64	+ 7	10.0	0.01654	- 136	+ 3	15.0	0.02408	- 135	- 4

**XVI**

1	2
C	Equa- tion
d 0.0	0.00050
.2	45
.4	40
.6	35
.8	31
1.0	27
1.2	0.00024
.4	22
.6	20
.8	20
2.0	21
2.2	0.00022
.4	24
.6	27
.8	31
3.0	35
3.2	0.00040
.4	45
.6	51
.8	56
4.0	61
4.2	0.00066
.4	70
.6	73
.8	76
5.0	79
5.2	0.00080
.4	80
.6	79
.8	78
6.0	76
6.2	0.00072
.4	68
.6	64
.8	59
7.0	54
7.2	0.00049
.4	44
.6	39
.8	34
8.0	30
8.2	0.00026
.4	23
.6	21
.8	20
9.0	20
9.2	0.00021
.4	22
.6	25
.8	28
10.0	0.00032

Applied Constant: +0.00000.

Constant: +0.00050.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XVII

Equation of Longitude

Argument D

D	Equatio	$\Delta$ o <sup>d</sup> o <sub>r</sub>	D	Equatio	$\Delta$ o <sup>d</sup> o <sub>r</sub>	D	Equatio	$\Delta$ o <sup>d</sup> o <sub>r</sub>	D	Equatio	$\Delta$ o <sup>d</sup> o <sub>r</sub>
0 00	0 200	+ 153	1 00	0 33393	+ 98	2 00	0 37080	- 29	3 00	0 28433	- 133
02	2 306	153	02	33587	96	02	37 0	31	02	8165	135
04	2061	153	04	33775	93	04	36955	34	04	7894	136
06	0918	153	06	33959	91	06	36885	36	06	76 1	137
08	1	15	08	34139	89	08	36810	39	08	7346	138
10	1528	153	10	34315	87	10	367 9	42	10	27068	139
0 12	1833	+ 15	1 12	0 34487	+ 85	2 12	0 36644	- 44	3 12	26789	- 140
14	2136	15	14	34653	8	14	36553	47	14	6507	141
16	2439	151	16	34815	8	16	36458	49	16	62 4	14
18	741	15	18	34973	78	18	36358	5	18	5938	144
20	3043	151	20	351 6	75	20	36 51	55	20	25650	144
0 22	3344	+ 15	1 22	0 35274	+ 73	2 22	36140	- 57	3 22	0 25362	- 145
24	3644	5	24	35418	71	24	360 5	59	24	25071	146
26	3943	149	26	35557	68	26	35904	62	26	4779	146
28	4 39	148	28	35690	66	28	35778	64	28	24485	147
30	24536	148	30	358 0	63	30	35648	67	30	24190	148
0 32	0 4830	+ 147	1 32	0 35943	+ 61	2 32	0 35512	- 69	3 32	0 23893	- 149
34	251 3	146	34	36063	59	34	35373	71	34	3596	149
36	25414	145	36	36177	56	36	352 8	73	36	23298	150
38	57 4	145	38	36 86	54	38	35080	76	38	2998	150
40	599	144	40	36391	51	40	34926	78	40	2697	151
0 42	6 78	+ 143	1 42	0 36489	+ 48	2 42	0 34768	- 80	3 42	0 2395	- 151
44	656	14	44	36584	46	44	34605	83	44	22093	151
46	6844	141	46	3667	43	46	34437	85	46	21790	152
48	27125	140	48	36757	41	48	34 65	87	48	21487	15
50	74	138	50	36835	38	50	34088	89	50	1184	152
0 52	0 27678	+ 137	1 52	0 36909	+ 36	2 52	0 33908	- 92	3 52	0 20879	- 152
54	7951	136	54	36977	33	54	337	94	54	20575	15
56	8	135	56	37 40	3	56	33533	96	56	0 70	153
58	849	133	58	37098	8	58	33339	98	58	19965	152
60	28756	13	60	37151	25	60	33142	100	60	19661	152
0 62	0 9018	+ 131	1 62	0 37197	+ 2	2 62	32940	- 102	3 62	0 19356	- 152
64	29 78	13	64	37239		64	3 735	104	64	19 5	152
66	9536	1 8	66	37 76	17	66	3 5 5	106	66	18747	15
68	9789	1 6	68	37307	15	68	3 31	108	68	18444	15
70	3 040	1 5	70	37334	1	70	32095	110	70	18141	151
0 72	0 30 88	+ 123	1 72	0 37354	+ 9	2 72	0 31874	- 111	3 72	0 17838	- 151
74	30533	1	74	3737	6	74	31650	113	74	17536	151
76	30775	1	76	37379	3	76	314 1	115	76	17234	151
78	31013	118	78	37383	+ 1	78	3119	117	78	16934	150
80	31248	117	80	37383	- 2	80	30955	118	80	16634	150
0 82	31479	+ 115	1 82	0 37377	- 4	2 82	0 30717	- 1 0	3 82	0 16336	- 149
84	317 7	113	84	37365	7	84	30475	1	84	16 39	148
86	3193	11	86	37348	10	86	3 30	123	86	15743	148
88	3 151	109	88	37325	13	88	2998	1 5	88	15448	147
90	3 368	108	90	37 98	15	90	9731	127	90	15154	146
0 92	32581	+ 106	1 92	0 37265	- 18	2 92	29476	- 128	3 92	0 14863	- 146
94	3279	104	94	372 7	21	94	9 0	129	94	14572	145
96	3 995	102	96	37183	23	96	28960	131	96	14284	144
98	33196	100	98	37134	26	98	28697	132	98	13997	143
1 00	0 33393	+ 98	2 00	0 37080	- 9	3 00	0 28433	- 133	4 00	0 13711	- 14

Applied to + 0000

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XVII *continued*

Equation of Longitude

Argument D

1	2	3	1	2	3	1	2	3	1	2	3
D	Equation	$\Delta_{0^d 0^m}$	D	Equation	$\Delta_{0^d 0^m}$	D	Equation	$\Delta_{0^d 0^m}$	D	Equation	$\Delta_{0^d 0^m}$
<sup>d</sup> 4 <sup>h</sup> 00	<sup>o</sup> 0 <sup>h</sup> 13711	- 142	<sup>d</sup> 5 <sup>h</sup> 00	<sup>o</sup> 0 <sup>h</sup> 03520	- 49	<sup>d</sup> 6 <sup>h</sup> 00	<sup>o</sup> 0 <sup>h</sup> 05222	+ 81	<sup>d</sup> 7 <sup>h</sup> 00	<sup>o</sup> 0 <sup>h</sup> 17628	+ 152
02	13428	141	02	3425	46	02	5386	83	02	17932	152
04	13147	140	04	3335	44	04	5553	85	04	18235	152
06	12869	139	06	3251	41	06	5725	87	06	18540	153
08	12592	138	08	3172	38	08	5902	89	08	18846	153
10	12318	137	10	3099	36	10	6083	91	10	19151	153
4 <sup>h</sup> 12	0 <sup>h</sup> 12045	- 136	5 <sup>h</sup> 12	0 <sup>h</sup> 03030	- 33	6 <sup>h</sup> 12	0 <sup>h</sup> 06267	+ 93	7 <sup>h</sup> 12	0 <sup>h</sup> 19457	+ 153
14	11775	134	14	2967	31	14	6456	96	14	19762	153
16	11509	133	16	2908	28	16	6649	98	16	20068	153
18	11244	132	18	2856	25	18	6847	100	18	20374	153
20	10981	131	20	2807	23	20	7049	102	20	20680	153
4 <sup>h</sup> 22	0 <sup>h</sup> 10722	- 129	5 <sup>h</sup> 22	0 <sup>h</sup> 02764	- 20	6 <sup>h</sup> 22	0 <sup>h</sup> 07255	+ 104	7 <sup>h</sup> 22	0 <sup>h</sup> 20986	+ 153
24	10466	127	24	2728	17	24	7465	106	24	21290	152
26	10213	126	26	2696	15	26	7679	108	26	21596	153
28	9962	125	28	2670	12	28	7897	110	28	21900	152
30	9715	123	30	2648	9	30	8118	112	30	22204	152
4 <sup>h</sup> 32	0 <sup>h</sup> 09470	- 121	5 <sup>h</sup> 32	0 <sup>h</sup> 02633	- 7	6 <sup>h</sup> 32	0 <sup>h</sup> 08343	+ 113	7 <sup>h</sup> 32	0 <sup>h</sup> 22507	+ 151
34	9230	120	34	2622	4	34	8571	115	34	22809	151
36	8992	118	36	2617	- 1	36	8803	117	36	23111	151
38	8758	116	38	2618	+ 2	38	9039	119	38	23412	150
40	8527	114	40	2623	4	40	9278	121	40	23710	149
4 <sup>h</sup> 42	0 <sup>h</sup> 08301	- 113	5 <sup>h</sup> 42	0 <sup>h</sup> 02634	+ 7	6 <sup>h</sup> 42	0 <sup>h</sup> 09521	+ 122	7 <sup>h</sup> 42	0 <sup>h</sup> 24009	+ 149
44	8077	111	44	2651	10	44	9766	123	44	24306	148
46	7857	109	46	2672	12	46	10014	125	46	24602	148
48	7641	107	48	2700	15	48	10266	127	48	24896	147
50	7428	105	50	2732	18	50	10520	128	50	25189	146
4 <sup>h</sup> 52	0 <sup>h</sup> 07220	- 103	5 <sup>h</sup> 52	0 <sup>h</sup> 02770	+ 20	6 <sup>h</sup> 52	0 <sup>h</sup> 10779	+ 130	7 <sup>h</sup> 52	0 <sup>h</sup> 25480	+ 145
54	7015	101	54	2813	23	54	11039	131	54	25770	144
56	6815	99	56	2861	26	56	11302	133	56	26057	143
58	6618	98	58	2915	28	58	11569	134	58	26343	142
60	6425	96	60	2973	31	60	11838	135	60	26627	141
4 <sup>h</sup> 62	0 <sup>h</sup> 06236	- 93	5 <sup>h</sup> 62	0 <sup>h</sup> 03038	+ 34	6 <sup>h</sup> 62	0 <sup>h</sup> 12109	+ 136	7 <sup>h</sup> 62	0 <sup>h</sup> 26908	+ 140
64	6052	91	64	3107	36	64	12383	138	64	27188	139
66	5873	89	66	3182	39	66	12659	139	66	27465	138
68	5697	87	68	3262	41	68	12937	140	68	27741	137
70	5526	85	70	3347	44	70	13218	141	70	28013	136
4 <sup>h</sup> 72	0 <sup>h</sup> 05359	- 82	5 <sup>h</sup> 72	0 <sup>h</sup> 03437	+ 47	6 <sup>h</sup> 72	0 <sup>h</sup> 13500	+ 142	7 <sup>h</sup> 72	0 <sup>h</sup> 28283	+ 135
74	5197	80	74	3533	49	74	13785	143	74	28551	133
76	5040	78	76	3633	52	76	14072	144	76	28816	132
78	4887	76	78	3739	54	78	14360	145	78	29078	130
80	4738	73	80	3849	57	80	14650	146	80	29337	129
4 <sup>h</sup> 82	0 <sup>h</sup> 04595	- 71	5 <sup>h</sup> 82	0 <sup>h</sup> 03965	+ 59	6 <sup>h</sup> 82	0 <sup>h</sup> 14942	+ 147	7 <sup>h</sup> 82	0 <sup>h</sup> 29595	+ 128
84	4456	69	84	4085	61	84	15236	147	84	29847	126
86	4321	66	86	4210	64	86	15530	148	86	30098	125
88	4192	64	88	4341	66	88	15826	149	88	30345	123
90	4067	61	90	4475	69	90	16124	149	90	30589	121
4 <sup>h</sup> 92	0 <sup>h</sup> 03948	- 58	5 <sup>h</sup> 92	0 <sup>h</sup> 04615	+ 71	6 <sup>h</sup> 92	0 <sup>h</sup> 16423	+ 150	7 <sup>h</sup> 92	0 <sup>h</sup> 30830	+ 120
94	3834	56	94	4760	74	94	16723	150	94	31068	118
96	3724	54	96	4909	76	96	17024	151	96	31302	116
98	3619	51	98	5063	78	98	17326	151	98	31532	114
5 <sup>h</sup> 00	0 <sup>h</sup> 03520	- 49	6 <sup>h</sup> 00	0 <sup>h</sup> 05222	+ 81	7 <sup>h</sup> 00	0 <sup>h</sup> 17628	+ 152	8 <sup>h</sup> 00	0 <sup>h</sup> 31758	+ 112

Applied Constant:  $+0^{\circ}20000$ .

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XVIII

Equation of Longitude

Argument E

E	Equa tion	$\Delta$ o or	$\frac{1}{2}\Delta^2$	E	Equa tion	$\Delta$ o or	$\frac{1}{2}\Delta^2$	E	Equa tion	$\Delta$ o or	$\frac{1}{2}\Delta^2$	E	Equa tion	$\Delta$ o or	$\frac{1}{2}\Delta^2$
0 00	8 0	+64 8		2 00	15 50	-1	-0 3	4 00	53 7	-6 4	+ 1	6 00	01734	+34 3	+0 3
04	8 59	64 6		04	15198	14 1	0 3	04	5087	59 4	0 1	04	1874	36 0	0 2
08	8517	64 6	0	08	15 37	16 5	4	08	485	58 4	0 1	08	02	37 6	0 3
12	8777	64 5	-0 1	12	15066	18 6	3	12	4619	57 5	0 1	12	178	39 9	0 1
16	9 33	64 1	0 0	16	14988	0 9	3	16	4392	56 5	1	16	341	41 5	0
20	9 90	64 0	0 0	20	14899	23 1	0 3	20	4167	55 5	1	20	511	43 5	0 1
0 24	09545	+63 4	- 1	2 24	0 14803	-25 1	-0 3	4 24	0 03948	-54 1	+ 2	6 24	0 0689	+45 0	+ 2
28	9797	63 0	1	28	14698	7 1	3	28	3734	5 8	0 1	28	871	46 5	0 2
32	1 049	62 4	1	32	14586	9 1	0 3	32	35 6	51 5	0 1	32	3061	48 1	0 2
36	96	61 5	1	36	14465	31 1	3	36	3322	5	0	36	3 56	49 5	0
40	10541	60 8	1	40	14337	33 1	3	40	31 6	48 5	2	40	3457	51 1	0 2
0 44	1 78	+59 9	-0 1	2 44	14 0	-35 1	- 3	4 44	0 02934	-47 1	+0 3	6 44	0 03665	+52 5	+0 1
48	110	59	0 1	48	14056	37 0	0 3	48	2749	45 5	0	48	3877	53 8	0 1
52	11 54	58 3	0 1	52	139 4	38 9	0	52	570	43 9	0	52	4095	55 0	0 1
56	1 486	57 4	0 1	56	13745	4 5	0	56	398	4	0	56	4317	56 1	0 2
60	11713	56 0	0 1	60	13580	4 3	0 1	60	34	40 4	0	60	4544	57 4	0 1
0 64	0 11934	+54 9	-0 1	2 64	0 13407	-44 0	-0 2	4 64	0 02075	-38 6	+0 2	6 64	0 04776	+58 4	+0 1
68	1 15	53 6	0 2	68	13 28	45 6	0 2	68	1925	36 5	0 2	68	5011	59 4	+0 1
72	12363	5 3	0 1	72	1304	47 4	0 1	72	1783	34 9	0 2	72	5251	60 1	0 0
76	12570	5 9	0 1	76	12849	48 9	0 1	76	1646	33 0	0	76	5492	60 8	+0 1
80	1 770	49 3	1	80	1 651	50 3	0 1	80	1519	31 0	0 3	80	5737	61 6	0 0
0 84	1 964	+47 9	- 1	2 84	0 1 447	-51 6	-0	4 84	0 1398	-29 1	+0 2	6 84	0 05985	+62 5	+0 1
88	13153	46 5	0 1	88	12 38	53 0	1	88	1286	6 9	0 4	88	6237	63 1	0 1
92	13335	44 8	0	92	120 3	54 3	1	92	1183	24 6	0 3	92	649	63 4	0 1
96	13511	43 1	0	96	11804	55 5	0 1	96	1089	5	0 3	96	6745	63 6	+0 1
1 00	13680	41 4	0	3 00	11579	56 5	0 2	5 00	1 03	20 5	3	7 00	6999	63 8	0 0
1 04	13842	+39 6	-0	3 04	0 11352	-57 6	- 1	5 04	0 00925	-18 4	+0 4	7 04	0 07255	+64 5	+0 1
08	13997	37 8	0 3	08	11118	58 9	-0 1	08	856	16 3	3	08	7515	64 7	0 0
12	14144	35 9	0	12	10881	59 6	0 0	12	795	14	0 3	12	7773	64 6	0 0
16	14 84	34 0	0 3	16	10641	6 3	-0 1	16	744	11 6	3	16	803	65 0	0
20	14416	31 9	0 3	20	10399	61 1	0 1	20	70	9 4	0 3	20	8293	64 9	0 0
1 24	0 14539	+29 9	-0 3	3 24	0 1015	-62 0	-0 1	5 24	0 00669	- 7 3	+0 3	7 24	0 08551	+64 8	0 0
28	14655	28 1	0 3	28	9903	62 5	0 0	28	644	5 0	0 3	28	8811	64 5	0 0
32	14764	6 1	3	32	965	63 1	0 0	32	6 9	2 6	0 3	32	9 67	64 0	0 0
36	14864	23 6	0 4	36	9398	63 5	0	36	6 3	-0 4	0 3	36	93 3	63 9	0 0
40	14953	21 4	3	40	9144	64 0	0	40	626	+ 1 9	0 3	40	9578	63 4	-0 1
1 44	15 35	+19 5	-0 3	3 44	0 08886	-64 5	0 0	5 44	0 00638	+ 4 1	+0 4	7 44	0 09830	+62 9	-0 1
48	151 9	17 4	3	48	8628	64 4	0 0	48	659	6 6	0 3	48	10 81	6 3	0 0
52	15174	15 1	3	52	8371	64 5	0	52	691	9	4	52	103 8	61 5	-0 1
56	15 3	1 9	0 3	56	811	64 6	0	56	731	11 0	0 3	56	1 573	60 6	0 1
60	15 77	1 6	0 3	60	7854	64 6	0 0	60	779	13 1	0 3	60	10813	59 8	0 1
1 64	0 15315	+ 7 6	- 3	3 64	07595	-64 6	0 0	5 64	0 00836	+15 1	+0 3	7 64	0 11051	+59	-0 1
68	15341	6	0 3	68	7337	64 4	0 0	68	900	17 3	0 3	68	11 85	58 0	0 1
72	15363	4 5	0 3	72	7 80	64 3	0	72	974	19 8	0 4	72	11515	57 0	1
76	15374	+ 1 8	3	76	68 3	63 9	+ 1	76	1058	2 0	0 3	76	11741	56 0	0 1
80	15377	-0 4	3	80	6569	63 5	0	80	1150	4 0	3	80	11963	54 8	0 1
1 84	15371	- 2 8	- 4	3 84	0 06315	-63 0	0	5 84	0 01 50	+ 6 1	+ 3	7 84	0 12179	+53 5	-0 1
88	15355	5 4	4	88	6065	62 4	+ 1	88	1359	8 1	0	88	12391	5 3	0
92	153 8	7 6	3	92	5816	61 8	0 1	92	1476	30 1	0 3	92	12597	50 6	0 2
96	15294	9 8	0 3	96	5570	61 1	0 1	96	1600	32 3	2	96	1 796	49 0	0 1
2 00	15 5	-12	-0 3	4 00	0 53 7	-60 4	+0 1	6 00	0 01734	+34 3	+ 3	8 00	0 12989	+47 5	-0

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

**XIX**

1	2	1	2
F	Equation	F	Equation
d	o	d	o
0.0	0.00100	4.0	0.00136
.2	86	.2	148
.4	72	.4	158
.6	60	.6	166
.8	48	.8	173
1.0	39	5.0	177
1.2	0.00031	5.2	0.00178
.4	26	.4	177
.6	23	.6	173
.8	22	.8	167
2.0	24	6.0	159
2.2	0.00029	6.2	0.00149
.4	36	.4	137
.6	45	.6	124
.8	56	.8	110
3.0	68	7.0	96
3.2	0.00081	7.2	0.00082
.4	95	.4	69
.6	109	.6	57
.8	123	.8	46
4.0	0.00136	8.0	0.00037

Applied Constant : +0.00000.

**XX**

1	2	1	2
G	Equation	G	Equation
d	o	d	o
0.0	0.00050	4.0	0.00066
.2	44	.2	71
.4	38	.4	76
.6	32	.6	80
.8	27	.8	83
1.0	22	5.0	84
1.2	0.00019	5.2	0.00085
.4	17	.4	85
.6	15	.6	83
.8	15	.8	80
2.0	16	6.0	76
2.2	0.00018	6.2	0.00072
.4	21	.4	67
.6	25	.6	61
.8	30	.8	55
3.0	35	7.0	48
3.2	0.00041	7.2	0.00042
.4	48	.4	36
.6	54	.6	31
.8	60	.8	26
4.0	0.00066	8.0	0.00022

Applied Constant : +0.00050.

**XXI**

1	2	1	2
H	Equation	H	Equation
d	o	d	o
0.0	0.00100	4.0	0.00081
.2	109	.2	72
.4	118	.4	65
.6	127	.6	58
.8	135	.8	53
1.0	141	5.0	49
1.2	0.00147	5.2	0.00047
.4	151	.4	46
.6	153	.6	47
.8	154	.8	50
2.0	153	6.0	54
2.2	0.00151	6.2	0.00059
.4	147	.4	66
.6	141	.6	74
.8	134	.8	83
3.0	127	7.0	92
3.2	0.00118	7.2	0.00101
.4	109	.6	110
.6	99	.4	120
.8	90	.8	128
4.0	0.00081	8.0	0.00136

Applied Constant : +0.00000.

**XXII**

Argument I

1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
I	Equation	$\Delta_{0d \cdot I}$	I	Equation	$\Delta_{0d \cdot I}$	I	Equation	$\Delta_{0d \cdot I}$	I	Equation	$\Delta_{0d \cdot I}$	I	Equation	$\Delta_{0d \cdot I}$
d	o		d	o		d	o		d	o		d	o	
0.0	0.00700	- 7,6	11.0	0.00107	- 1,4	22.0	0.00473	+ 7,0	33.0	0.01206	+ 4,1	44.0	0.01121	- 5,4
0.5	662	7,5	11.5	101	1,0	22.5	508	7,2	33.5	1225	3,7	44.5	1093	5,7
1.0	625	7,5	12.0	97	- 0,5	23.0	545	7,4	34.0	1243	3,4	45.0	1064	6,0
1.5	587	7,5	12.5	96	0,0	23.5	582	7,5	34.5	1259	2,9	45.5	1033	6,4
2.0	550	7,3	13.0	97	+ 0,4	24.0	620	7,5	35.0	1272	2,4	46.0	1000	6,6
2.5	514	7,1	13.5	100	0,9	24.5	657	7,4	35.5	1283	2,0	46.5	967	6,8
3.0	0.00479	- 7,0	14.0	0.00106	+ 1,4	25.0	0.00694	+ 7,5	36.0	0.01292	+ 1,5	47.0	0.00932	- 7,0
3.5	444	6,9	14.5	114	1,8	25.5	732	7,6	36.5	1298	1,0	47.5	897	7,1
4.0	410	6,7	15.0	124	2,3	26.0	770	7,5	37.0	1302	0,6	48.0	861	7,3
4.5	377	6,4	15.5	137	2,8	26.5	807	7,4	37.5	1304	+ 0,1	48.5	824	7,4
5.0	346	6,1	16.0	152	3,2	27.0	844	7,3	38.0	1303	- 0,4	49.0	787	7,4
5.5	0.00316	- 5,8	16.5	0.00169	+ 3,6	27.5	0.00880	+ 7,2	38.5	0.01300	- 0,8	49.5	0.00750	- 7,5
6.0	288	5,5	17.0	188	4,0	28.0	916	7,1	39.0	1295	1,3	50.0	712	7,6
6.5	261	5,2	17.5	209	4,4	28.5	951	6,9	39.5	1287	1,8	50.5	674	7,6
7.0	236	4,8	18.0	232	4,8	29.0	985	6,7	40.0	1277	2,3	51.0	636	7,5
7.5	213	4,4	18.5	257	5,1	29.5	1018	6,4	40.5	1264	2,7	51.5	599	7,4
8.0	0.00192	- 4,2	19.0	0.00283	+ 5,4	30.0	0.01049	+ 6,1	41.0	0.01250	- 3,0	52.0	0.00562	- 7,3
8.5	171	3,8	19.5	311	5,8	30.5	1079	5,9	41.5	1234	3,5	52.5	526	7,2
9.0	154	3,2	20.0	341	6,2	31.0	1108	5,6	42.0	1215	4,0	53.0	490	7,1
9.5	139	2,8	20.5	373	6,4	31.5	1135	5,2	42.5	1194	4,4	53.5	455	7,0
10.0	126	2,4	21.0	405	6,5	32.0	1160	4,9	43.0	1171	4,7	54.0	420	6,8
10.5	0.00115	- 1,9	21.5	0.00438	+ 6,8	32.5	0.01184	+ 4,6	43.5	0.01147	- 5,0	54.5	0.00387	- 6,5
11.0	0.00107	- 1,4	22.0	0.00473	+ 7,0	33.0	0.01206	+ 4,1	44.0	0.01121	- 5,4	55.0	0.00355	- 6,3

Applied Constant : +0.00700.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

XXIII

J	Equatio	J	Equat on
0	0 00050	250	0 00075
5	47	255	77
10	44	260	79
15	41	265	81
20	39	270	82
25	36	275	83
30	0 00034	280	0 00084
35	31	285	85
40	9	290	86
45	7	295	86
50	5	300	86
55	0 00 23	305	0 00086
60	1	310	86
65	19	315	85
70	18	320	84
75	17	325	83
80	0 00016	330	0 00082
85	15	335	81
90	14	340	79
95	14	345	78
100	14	350	76
105	0 00014	355	0 00074
110	14	360	7
115	15	365	7
120	16	370	67
125	17	375	65
130	0 00018	380	0 0006
135	19	385	59
140	1	390	56
145	3	395	54
150	4	400	51
155	0 00026	405	0 00048
160	9	410	45
165	31	415	43
170	33	420	40
175	36	425	37
180	0 00039	430	0 00034
185	4	435	3
190	44	440	29
195	47	445	7
200	5	450	5
205	0 00053	455	0 000 3
210	55	460	21
215	58	465	19
220	61	470	18
225	64	475	17
230	0 00066	480	0 00016
235	69	485	15
240	71	490	15
245	73	495	14
250	0 00075	500	0 00014

Appli d C t t + 5

XXIV

K	Equation	$\Delta$ r	K	Equation	$\Delta$ r <sub>d</sub>
0	0 00400	- 4 6	250	0 00495	+ 4 4
5	377	4 6	255	516	4 3
10	354	4 5	260	538	4 1
15	33	4 4	265	558	4 0
20	310	4 4	270	578	3 8
25	88	4 3	275	596	3 6
30	0 00 67	- 4 2	280	0 0 614	+ 3 5
35	47	4 0	285	631	3 3
40	2 7	3 9	290	647	3 1
45	208	3 7	295	66	2 8
50	190	3 4	300	675	2 6
55	0 00173	- 3 3	305	0 00687	+ 2 3
60	157	3 1	310	698	2
65	14	9	315	7 7	1 7
70	1 8	6	320	715	1 4
75	116	3	325	721	1 1
80	0 00105	- 2 1	330	0 00726	+ 0 8
85	95	1 8	335	7 9	0 5
90	87	1 5	340	731	+ 0 2
95	8	1 2	345	731	0 0
100	75	0 9	350	731	- 0 4
105	0 00071	- 0 6	355	0 00728	- 0 8
110	69	- 0 3	360	723	1 1
115	68	0	365	717	1 3
120	69	+ 3	370	710	1 6
125	71	0 6	375	701	1 9
130	0 00075	+ 1 0	380	0 00691	- 2
135	81	1 3	385	679	5
140	88	1 6	390	666	2 8
145	97	1 9	395	651	3 0
150	107	2 2	400	636	3 2
155	0 00119	+ 2 4	405	0 00619	- 3 4
160	131	2 7	410	6	3 6
165	145	2 9	415	583	3 8
170	160	3 1	420	564	4 0
175	176	3 3	425	544	4 1
180	0 00193	+ 3 6	430	0 00523	- 4
185	211	3 8	435	50	4 3
190	31	4	440	480	4 4
195	251	4 1	445	458	4 5
200	7	4 2	450	435	4 5
205	0 00 93	+ 4 3	455	0 0041	- 4 6
210	315	4 4	460	389	4 5
215	337	4 5	465	366	4 5
220	360	4 5	470	344	4 4
225	38	4 5	475	3	4 4
230	0 0405	+ 4 5	480	0 00300	- 4 3
235	428	4 6	485	278	4 3
240	451	4 5	490	57	4 1
245	473	4 4	495	237	4 0
250	0 00495	+ 4 4	500	0 00217	- 3 8

Appli d C t t + 004

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XXV

Equations of Longitude

XXVI

1	2	3	1	2	3
L	Equation	$\Delta_{rd}$	L	Equation	$\Delta_{rd}$
d	°		d	°	
0	0°00700	+ 8,8	250	0°00622	- 8,6
5	744	8,7	255	579	8,6
10	787	8,7	260	536	8,5
15	830	8,6	265	494	8,3
20	873	8,5	270	453	8,1
25	915	8,4	275	413	7,9
30	0°00957	+ 8,1	280	0°00374	- 7,7
35	997	7,8	285	336	7,4
40	1035	7,6	290	300	7,1
45	1072	7,3	295	265	6,7
50	1108	7,0	300	233	6,3
55	0°01142	+ 6,6	305	0°00202	- 5,9
60	1174	6,2	310	174	5,5
65	1204	5,8	315	148	5,0
70	1232	5,4	320	124	4,5
75	1258	4,9	325	102	4,0
80	0°01281	+ 4,4	330	0°00084	- 3,5
85	1302	3,9	335	68	3,0
90	1320	3,4	340	54	2,5
95	1336	2,9	345	43	1,9
100	1349	2,4	350	35	1,4
105	0°01359	+ 1,8	355	0°00030	- 0,8
110	1367	1,2	360	27	- 0,2
115	1372	0,6	365	28	+ 0,4
120	1373	+ 0,1	370	31	1,0
125	1372	- 0,5	375	37	1,5
130	0°01368	- 1,1	380	0°00046	+ 2,1
135	1361	1,6	385	57	2,6
140	1352	2,2	390	72	3,2
145	1339	2,8	395	89	3,7
150	1324	3,3	400	109	4,2
155	0°01306	- 3,8	405	0°00131	+ 4,7
160	1286	4,3	410	156	5,2
165	1263	4,8	415	182	5,6
170	1238	5,2	420	212	6,0
175	1211	5,6	425	243	6,4
180	0°01182	- 6,1	430	0°00276	+ 6,8
185	1150	6,6	435	311	7,1
190	1116	6,9	440	347	7,5
195	1081	7,2	445	385	7,8
200	1044	7,5	450	425	8,0
205	0°01006	- 7,8	455	0°00466	+ 8,2
210	966	8,1	460	507	8,4
215	925	8,3	465	550	8,6
220	883	8,5	470	593	8,6
225	840	8,6	475	637	8,7
230	0°00797	- 8,6	480	0°00680	+ 8,7
235	754	8,7	485	724	8,8
240	710	8,7	490	768	8,7
245	666	8,6	495	811	8,6
250	0°00622	- 8,6	500	0°00854	+ 8,5

Applied Constant : +0°00700.

1	2	3	1	2	3
M	Equation	$\Delta_{rd}$	M	Equation	$\Delta_{rd}$
d	°		d	°	
0	0°00300	+ 3,8	250	0°00273	- 3,8
5	319	3,8	255	254	3,8
10	338	3,8	260	235	3,7
15	357	3,7	265	217	3,6
20	375	3,7	270	199	3,6
25	393	3,6	275	181	3,5
30	0°00411	+ 3,5	280	0°00164	- 3,4
35	428	3,4	285	147	3,2
40	445	3,3	290	132	3,1
45	461	3,2	295	117	3,0
50	477	3,0	300	102	2,8
55	0°00491	+ 2,8	305	0°00088	- 2,6
60	505	2,7	310	76	2,4
65	518	2,5	315	64	2,2
70	530	2,3	320	54	2,1
75	541	2,1	325	44	1,9
80	0°00552	+ 1,9	330	0°00035	- 1,7
85	561	1,7	335	27	1,4
90	569	1,5	340	21	1,2
95	576	1,3	345	16	0,9
100	582	1,1	350	12	0,7
105	0°00587	+ 0,8	355	0°00009	- 0,5
110	590	0,6	360	7	- 0,2
115	592	+ 0,3	365	7	+ 0,1
120	593	0,0	370	8	0,3
125	592	- 0,2	375	10	0,5
130	0°00591	- 0,5	380	0°00013	+ 0,8
135	588	0,7	385	18	1,0
140	584	0,9	390	23	1,3
145	579	1,1	395	30	1,5
150	573	1,3	400	38	1,8
155	0°00566	- 1,5	405	0°00048	+ 2,1
160	558	1,8	410	57	2,2
165	548	2,0	415	68	2,3
170	538	2,2	420	80	2,5
175	526	2,4	425	93	2,7
180	0°00513	- 2,6	430	0°00107	+ 2,9
185	499	2,8	435	122	3,0
190	485	3,0	440	137	3,2
195	470	3,1	445	153	3,3
200	454	3,2	450	170	3,4
205	0°00438	- 3,3	455	0°00187	+ 3,5
210	421	3,5	460	205	3,6
215	403	3,6	465	223	3,6
220	385	3,6	470	241	3,7
225	367	3,7	475	260	3,8
230	0°00348	- 3,7	480	0°00279	+ 3,8
235	330	3,7	485	298	3,8
240	311	3,8	490	317	3,8
245	292	3,8	495	336	3,7
250	0°00273	- 3,8	500	0°00354	+ 3,6

Applied Constant : +0°00300.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XXVII

Equation of Longitude

Argument  $\alpha$

$\alpha$	Equation	$\Delta_{10}$	$\alpha$	Equation	$\Delta_{10}$	$\alpha$	Equation	$\Delta_{10}$	$\alpha$	Equation	$\Delta_{10}$	$\alpha$	Equation	$\Delta_{10}$
0	001400	-21	1000	000054	-	2000	001098	+18	3000	0631	+8	4000	002058	-18
20	1358	1	1020	5	-1	2020	1134	18	3020	647	8	4020	022	18
40	1317	1	1040	52		2040	1170	18	3040	2661	7	4040	1985	19
60	176	21	1060	5	+1	2060	107	18	3060	674	6	4060	1947	19
80	135	1	1080	54	1	2080	14	18	3080	686	6	4080	199	19
100	1194	1	1100	57		2100	1279	19	3100	697	5	4100	1871	19
120	001153	-20	1120	00061	+	2120	001316	+18	3120	02707	+5	4120	001832	-2
140	1113	0	1140	66	3	2140	135	18	3140	716	4	4140	1793	20
160	1073	0	1160	7	4	2160	1389	18	3160	723	4	4160	1753	20
180	1033	20	1180	8	4	2180	1425	18	3180	730	3	4180	1713	0
200	994	2	1200	88	4	2200	1462	18	3200	736	3	4200	1673	20
220	00955	-0	1220	00097	+5	2220	001498	+18	3220	0074	+2	4220	001633	-21
240	915	20	1240	107	6	2240	1535	18	3240	2744		4240	1591	21
260	877	19	1260	119	6	2260	1571	18	3260	2747	1	4260	1551	1
280	84	19	1280	131	7	2280	1607	18	3280	2748	+1	4280	1509	21
300	80	19	1300	145	7	2300	1644	18	3300	749	0	4300	1468	1
320	000765	-19	1320	000159	+8	2320	001680	+18	3320	002747	-1	4320	001426	-21
340	78	18	1340	175	8	2340	1716	18	3340	2745	2	4340	1384	21
360	693	18	1360	191	9	2360	1751	18	3360	2741		4360	1343	1
380	659	17	1380	209	9	2380	1787	18	3380	737	3	4380	130	21
400	625	17	1400	6	9	2400	1821	17	3400	2731	3	4400	1261	21
420	00059	-16	1420	000246	+10	2420	001856	+18	3420	00724	-4	4420	001219	-21
440	560	16	1440	66	10	2440	1891	17	3440	2716	4	4440	1179	0
460	59	16	1460	87	11	2460	1925	17	3460	2707	5	4460	1138	20
480	498	15	1480	39	11	2480	1959	17	3480	2697	6	4480	1098	20
500	468	15	1500	331	1	2500	199	17	3500	2685	6	4500	1058	0
520	000440	-14	1520	000355	+12	2520	00205	+16	3520	002672	-7	4520	001018	-20
540	411	14	1540	378	12	2540	057	16	3540	2659	7	4540	979	20
560	383	14	1560	404	13	2560	2090	16	3560	643	8	4560	939	2
580	357	13	1580	430	13	2580	211	16	3580	628	8	4580	900	19
600	332	1	1600	456	13	2600	152	15	3600	610	9	4600	86	19
620	000309	-12	1620	000483	+14	2620	002182	+15	3620	00592	-10	4620	000824	-19
640	285	12	1640	511	14	2640	13	15	3640	57	10	4640	788	18
660	263	11	1660	539	14	2660	2243	15	3660	2552	11	4660	751	18
680	41	11	1680	568	15	2680	271	14	3680	530	11	4680	715	18
700	1	10	1700	597	15	2700	299	14	3700	2508	12	4700	681	17
720	0001	-10	1720	000628	+15	2720	00326	+14	3720	00484	-1	4720	000646	-17
740	183	9	1740	658	16	2740	2353	14	3740	2459	13	4740	613	17
760	167	8	1760	690	16	2760	2380	13	3760	434	13	4760	579	17
780	151	8	1780	722	16	2780	405	1	3780	47	14	4780	547	16
800	136	7	1800	754	16	2800	429	12	3800	38	14	4800	517	15
820	0001	-7	1820	000786	+17	2820	002453	+12	3820	002351	-15	4820	000487	-15
840	110	6	1840	80	17	2840	2476	12	3840	2322	15	4840	458	15
860	99	5	1860	853	17	2860	2499	11	3860	291	15	4860	428	15
880	90	5	1880	887	17	2880	2521	11	3880	2261	16	4880	400	14
900	81	4	1900	9	18	2900	541	10	3900	28	17	4900	373	13
920	000073	-4	1920	000957	+18	2920	002561	+10	3920	002195	-17	4920	000347	-13
940	67	3	1940	99	18	2940	2579	9	3940	216	17	4940	323	12
960	6		1960	107	18	2960	598	9	3960	128	17	4960	299	12
980	58	2	1980	106	18	2980	2615	8	3980	2093	18	4980	276	11
1000	000054	-2	2000	001098	+18	3000	002631	+8	4000	002058	-18	5000	000254	-11

Appl d C t t + 400



# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XXVIII

Equation of Longitude

Argument N

1	2	3	1	2	3	1	2	3
N	Equation	$\Delta$	N	Equation	$\Delta$	N	Equation	$\Delta$
1850°0	0°01763	+ 15	1900°0	0°01301	- 22	1950°0	0°00681	+ 19
1°0	1776	11	1°0	1278	24	1°0	701	21
2°0	1784	10	2°0	1253	25	2°0	722	23
3°0	1795	9	3°0	1229	25	3°0	747	27
4°0	1801	6	4°0	1204	27	4°0	775	29
5°0	1806	6	5°0	1176	29	5°0	805	31
1856°0	0°01813	+ 7	1906°0	0°01146	- 30	1956°0	0°00837	+ 33
7°0	1820	7	7°0	1116	32	7°0	870	34
8°0	1826	6	8°0	1083	33	8°0	905	35
9°0	1831	8	9°0	1050	34	9°0	940	36
1860°0	1841	10	1910°0	1016	36	1960°0	977	37
1861°0	0°01851	+ 9	1911°0	0°00979	- 36	1961°0	0°01014	+ 36
2°0	1859	9	2°0	944	36	2°0	1049	36
3°0	1868	9	3°0	908	35	3°0	1085	35
4°0	1877	9	4°0	874	33	4°0	1118	32
5°0	1886	9	5°0	842	32	5°0	1149	33
1866°0	0°01895	+ 9	1916°0	0°00810	- 32	1966°0	0°01183	+ 31
7°0	1903	8	7°0	779	29	7°0	1212	30
8°0	1911	7	8°0	752	26	8°0	1242	29
9°0	1917	6	9°0	728	23	9°0	1268	26
1870°0	1922	3	1920°0	706	21	1970°0	1294	26
1871°0	0°01923	+ 1	1921°0	0°00686	- 19	1971°0	0°01320	+ 24
2°0	1923	- 2	2°0	669	14	2°0	1342	23
3°0	1919	6	3°0	658	11	3°0	1366	23
4°0	1912	8	4°0	648	10	4°0	1388	23
5°0	1903	10	5°0	638	8	5°0	1412	25
1876°0	0°01892	- 14	1926°0	0°00632	- 5	1976°0	0°01438	+ 25
7°0	1876	18	7°0	628	3	7°0	1462	25
8°0	1857	20	8°0	627	- 1	8°0	1487	26
9°0	1837	23	9°0	626	0	9°0	1514	28
1880°0	1812	26	1930°0	627	+ 1	1980°0	1543	30
1881°0	0°01786	- 28	1931°0	0°00628	+ 1	1981°0	0°01573	+ 31
2°0	1757	28	2°0	628	2	2°0	1604	31
3°0	1730	29	3°0	631	+ 2	3°0	1635	34
4°0	1699	31	4°0	631	0	4°0	1671	35
5°0	1668	30	5°0	631	0	5°0	1704	34
1886°0	0°01640	- 30	1936°0	0°00631	- 1	1986°0	0°01738	+ 35
7°0	1608	31	7°0	630	1	7°0	1773	34
8°0	1579	28	8°0	629	2	8°0	1806	34
9°0	1552	28	9°0	627	2	9°0	1841	34
1890°0	1524	27	1940°0	626	1	1990°0	1873	31
1891°0	0°01499	- 26	1941°0	0°00625	- 3	1991°0	0°01903	+ 29
2°0	1472	26	2°0	621	- 2	2°0	1931	28
3°0	1448	23	3°0	621	+ 2	3°0	1959	26
4°0	1426	22	4°0	625	3	4°0	1982	22
5°0	1404	22	5°0	626	4	5°0	2002	20
1896°0	0°01383	- 21	1946°0	0°00632	+ 8	1996°0	0°02021	+ 17
7°0	1363	21	7°0	641	10	8°0	2035	12
8°0	1342	21	8°0	651	12	7°0	2044	9
9°0	1322	21	9°0	664	15	9°0	2053	8
1900°0	0°01301	- 22	1950°0	0°00681	+ 19	2000°0	0°02059	+ 4

Applied Constant: +0°01400.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XXIX

Equation of Longitude

Argument O

O	Equation	$\Delta$ o o <sub>r</sub>	O	Equation	$\Delta$ o	O	Equation	$\Delta$ i	O	Equation	$\Delta$ d	O	Equation	$\Delta$ o o
0 00	0 04000	-7	1 00	0 099	+13	2 00	0 05440	+65	3 00	0 7369	-37	4 00	0 01317	-51
02	3861	70	02	1 7	15	02	5569	64	02	7 94	39	02	1216	50
04	37 1	70	04	16	18	04	5696	63	04	7 14	41	04	1118	48
06	3583	69	06	198		06	58 1	6	06	713	44	06	1025	46
08	3444	69	08	4		08	5944	61	08	7 4	45	08	935	45
10	33 7	69	10	87	5	10	6064	60	10	6951	47	10	847	43
0 12	0 03170	-68	1 12	00339	+7	2 12	0 0618	+58	3 12	0 06856	-49	4 12	0 00764	-41
14	3 34	68	14	395	9	14	6 97	57	14	6757	50	14	685	38
16	899	67	16	455	31	16	64 9	55	16	6655	52	16	611	36
18	766	66	18	5 0	34	18	6518	54	18	6550	53	18	54	34
20	634	66	20	589	36	20	66 5	53	20	6442	55	20	474	3
0 22	0 02504	-65	1 22	0 0 663	+38	2 22	0 67 8	+51	3 22	0 06330	-57	4 22	0 00411	-3
24	376	64	24	740	40	24	68 7	49	24	6216	58	24	355	7
26	50	63	26	8	4	26	69 3	47	26	6099	59	26	3	6
28	1 6	6	28	907	44	28	7 16	45	28	5980	61	28	53	3
30	2004	61	30	997	46	30	7104	43	30	5857	6	30	10	21
0 32	0 01885	59	1 32	01090	+47	2 32	0 07189	+4	3 32	0 05733	-63	4 32	0 00171	-19
34	1768	58	34	1186	49	34	727	40	34	5607	64	34	136	16
36	1654	56	36	1 86	51	36	7347	38	36	5478	65	36	107	14
38	1543	55	38	1390	53	38	7420	36	38	5348	66	38	81	11
40	1435	53	40	1496	54	40	7489	33	40	5 16	66	40	62	9
0 42	01331	-52	1 42	01606	+56	2 42	0 7553	+31	3 42	0 05083	-67	4 42	0 00 47	-6
44	1 9	50	44	1719	57	44	7613	9	44	4948	68	44	37	4
46	1131	48	46	1836	58	46	7668	7	46	481	68	46	31	2
48	1 37	46	48	195	59	48	7719	5	48	4675	69	48	31	+1
50	946	45	50	2 73	61	50	7766	2	50	4537	69	50	36	4
0 52	0 00858	-43	1 52	0 02196	+6	2 52	0 078 7	+20	3 52	04399	-69	4 52	0 00045	+6
54	775	41	54	2321	63	54	7845	18	54	4260	70	54	60	8
56	696	39	56	2449	64	56	7877	15	56	41 1	70	56	78	11
58	6 1	37	58	578	65	58	7904	13	58	3981	70	58	10	13
60	550	35	60	7 9	66	60	79 7	10	60	384	70	60	131	16
0 62	0 00483	-33	1 62	841	+67	2 62	0 07945	+8	3 62	0 03703	-70	4 62	0 00164	+18
64	42	3	64	2975	68	64	7958	5	64	3564	70	64	203	21
66	363	28	66	3111	68	66	7966	+3	66	3425	69	66	246	23
68	3 9	6	68	3247	69	68	7969	0	68	3288	69	68	293	25
70	60	23	70	3385	69	70	7967	-2	70	3151	68	70	346	27
0 72	0 00216	-1	1 72	0 035 3	+69	2 72	0 7961	-5	3 72	0 03 15	-68	4 72	0 00403	+29
74	176	19	74	3661	7	74	7949	7	74	2881	67	74	463	32
76	141	16	76	38 0	70	76	7933	9	76	2748	66	76	529	34
78	111	14	78	394	7	78	7912	1	78	2616	65	78	598	36
80	85	1	80	4079	7	80	7885	14	80	2487	64	80	673	38
0 82	00065	-9	1 82	0 04 18	+70	2 82	0 07855	-17	3 82	0 359	-64	4 82	0 00750	+4
84	49	7	84	4357	7	84	7819	19	84	2233	63	84	833	42
86	38	4	86	4496	69	86	7779	22	86	109	61	86	919	44
88	3	-	88	4634	69	88	7734	4	88	1088	60	88	1 9	46
90	31	+1	90	4771	69	90	7684	26	90	1869	58	90	1103	48
0 92	0 00035	+3	1 92	0 04908	+68	2 92	7630	-8	3 92	0 01753	-58	4 92	0 01199	+49
94	44	6	94	5 43	67	94	7571	31	94	1639	56	94	130	51
96	58	8	96	5177	67	96	7508	33	96	15 8	54	96	14 4	53
98	76	1	98	5309	66	98	7441	35	98	1421	53	98	1510	54
1 00	0 00099	+13	2 00	0 0544	+65	3 00	0 07369	-37	4 00	0 1317	-51	5 00	016 1	+56

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

XXIX continued

Argument O

XXX

1	2	3	1	2	3	1	2	3
O	Equation	$\Delta_{0d \cdot 01}$	O	Equation	$\Delta_{0d \cdot 01}$	O	Equation	$\Delta_{0d \cdot 01}$
d	o		d	o		d	o	
5.00	0.01621	+ 56	6.00	0.07561	+ 31	7.00	0.05065	- 67
.02	1734	57	.02	7620	29	.02	4930	68
.04	1850	59	.04	7675	26	.04	4793	69
.06	1968	60	.06	7725	24	.06	4656	69
.08	2089	61	.08	7772	22	.08	4518	69
.10	2213	62	.10	7812	19	.10	4380	69
5.12	0.02338	+ 63	6.12	0.07849	+ 17	7.12	0.04241	- 70
.14	2466	65	.14	7881	15	.14	4102	70
.16	2596	65	.16	7907	12	.16	3962	70
.18	2727	66	.18	7929	10	.18	3823	70
.20	2859	67	.20	7947	8	.20	3684	70
5.22	0.02993	+ 68	6.22	0.07959	+ 5	7.22	0.03545	- 70
.24	3129	68	.24	7966	+ 3	.24	3406	69
.26	3265	69	.26	7969	0	.26	3269	68
.28	3403	69	.28	7966	- 3	.28	3133	68
.30	3542	69	.30	7959	5	.30	2997	68
5.32	0.03680	+ 69	6.32	0.07947	- 7	7.32	0.02863	- 67
.34	3819	70	.34	7930	10	.34	2730	66
.36	3959	70	.36	7908	12	.36	2598	65
.38	4098	70	.38	7881	15	.38	2469	64
.40	4237	70	.40	7850	17	.40	2342	63
5.42	0.04376	+ 70	6.42	0.07814	- 19	7.42	0.02216	- 62
.44	4515	69	.44	7773	22	.44	2093	61
.46	4653	69	.46	7727	24	.46	1972	60
.48	4790	69	.48	7677	26	.48	1853	59
.50	4927	68	.50	7622	29	.50	1737	57
5.52	0.05061	+ 67	6.52	0.07562	- 31	7.52	0.01624	- 56
.54	5195	67	.54	7499	33	.54	1513	55
.56	5327	66	.56	7431	35	.56	1406	53
.58	5458	65	.58	7359	37	.58	1303	51
.60	5586	64	.60	7283	39	.60	1203	50
5.62	0.05713	+ 63	6.62	0.07203	- 41	7.62	0.01105	- 48
.64	5838	62	.64	7118	43	.64	1013	46
.66	5960	61	.66	7030	45	.66	923	44
.68	6080	60	.68	6938	47	.68	836	43
.70	6198	58	.70	6843	49	.70	753	40
5.72	0.06312	+ 57	6.72	0.06743	- 51	7.72	0.00675	- 38
.74	6424	55	.74	6641	52	.74	601	36
.76	6533	54	.76	6535	54	.76	531	34
.78	6639	52	.78	6427	55	.78	465	32
.80	6741	50	.80	6314	57	.80	403	29
5.82	0.06840	+ 49	6.82	0.06200	- 58	7.82	0.00348	- 26
.84	6936	47	.84	6083	59	.84	295	25
.86	7028	45	.86	5963	61	.86	247	23
.88	7116	43	.88	5840	62	.88	205	20
.90	7200	41	.90	5716	63	.90	166	18
5.92	0.07280	+ 39	6.92	0.05589	- 64	7.92	0.00132	- 16
.94	7357	37	.94	5460	65	.94	103	14
.96	7429	35	.96	5330	66	.96	78	11
.98	7498	33	.98	5198	66	.98	60	8
6.00	0.07561	+ 31	7.00	0.05065	- 67	8.00	0.00046	- 6

Applied Constant: +0.04000.

1	2	3
P	Equation	$\Delta_{0d \cdot 01}$
d	o	
0.00	0.00050	+ 0,8
.08	56	0,8
.16	62	0,8
.24	68	0,7
.32	73	0,6
.40	78	0,6
0.48	0.00083	+ 0,6
.56	87	0,4
.64	90	0,3
.72	92	0,2
.80	93	+ 0,1
0.88	0.00094	0,0
.96	94	- 0,1
1.04	93	0,2
.12	91	0,3
.20	88	0,4
1.28	0.00084	- 0,5
.36	80	0,6
.44	75	0,6
.52	70	0,7
.60	64	0,8
1.68	0.00058	- 0,8
.76	52	0,8
.84	46	0,8
.92	40	0,8
2.00	34	0,8
2.08	0.00028	- 0,7
.16	23	0,6
.24	19	0,5
.32	15	0,5
.40	11	0,4
2.48	0.00009	- 0,3
.56	7	0,2
.64	6	- 0,1
.72	6	+ 0,1
.80	7	0,2
2.88	0.00009	+ 0,3
.96	11	0,3
3.04	14	0,4
.12	18	0,6
.20	23	0,6
3.28	0.00028	+ 0,7
.36	34	0,8
.44	40	0,8
.52	46	0,8
.60	52	0,8
3.68	0.00058	+ 0,8
.76	64	0,8
.84	70	0,7
.92	75	0,6
4.00	0.00080	+ 0,6

Constant: +0.00050.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

XXXI

Q	Equation	$\Delta_{0^d 0}$	Q	Equation	$\Delta_{0^d 01}$
<sup>d</sup> 0 00	0 0 600	- 8 1	2 00	0 00771	+ 7 6
04	567	8 1	04	801	7 4
08	535	8 1	08	830	7 1
12	502	8 1	12	858	6 9
16	470	7 9	16	885	6 6
20	439	7 6	20	911	6 2
0 24	0 00409	- 7 5	2 24	0 00935	+ 5 8
28	379	7 4	28	957	5 4
32	350	7 0	32	978	4 9
36	3 3	6 6	36	996	4 4
40	97	6 3	40	1 13	3 9
0 44	0 00273	- 5 9	2 44	0 01027	+ 3 4
48	50	5 5	48	1040	2 9
52	9	5 0	52	1050	3
56	1	4 6	56	1058	1 8
60	192	4 1	60	1064	1 3
0 64	0 00177	- 3 5	2 64	0 01068	+ 0 6
68	164	3 0	68	1069	0 0
72	153	2 5	72	1 68	- 0 6
76	144	1 9	76	1064	1 1
80	138	1 3	80	1059	1 5
0 84	0 134	- 8	2 84	0 01052	- 2 1
88	132	- 0 3	88	104	2 9
92	13	+ 0 4	92	1029	3 4
96	135	0 9	96	1015	3 8
1 00	139	1 4	3 00	999	4 3
1 04	0 00146	+ 1	3 04	0 00980	- 4 9
08	156	8	08	960	5 3
12	168	3 3	12	938	5 8
16	182	3 8	16	914	6 3
20	198	4 1	20	888	6 5
1 24	0 00215	+ 4 6	3 24	0 00862	- 6 8
28	35	5	28	834	7 1
32	57	5 6	32	8 5	7 4
36	280	6 0	36	775	7 6
40	305	6 4	40	744	7 8
1 44	0 0 331	+ 6 6	3 44	0 00713	- 7 9
48	358	7	48	681	8 1
52	387	7 4	52	648	8 2
56	417	7 6	56	615	8 2
60	448	7 9	60	58	8 2
1 64	0 0 480	+ 8 0	3 64	0 0 549	- 8 1
68	51	8 0	68	517	8 0
72	544	8 1	72	485	8 1
76	577	8 2	76	45	7 9
80	610	8	80	4 1	7 6
1 84	0 00643	+ 8 1	3 84	0 00391	- 7 4
88	675	8 1	88	36	7 1
92	7 8	8 1	92	334	6 8
96	740	7 9	96	308	6 3
2 00	0 00771	+ 7 6	4 00	0 84	- 5 7

Appli d C t t + 00600

XXXII

R	Equation	$\Delta_{0^d 01}$
0 00	0 00100	- 1 6
08	87	1 6
16	74	1 6
24	61	1 6
32	49	1 4
40	39	1 3
0 48	0 00029	- 1 1
56	1	0 9
64	14	0 8
72	9	0 5
80	6	- 0 3
0 88	0 00005	0 0
96	6	+ 0 2
1 04	8	0 4
12	12	0 6
20	18	0 9
1 28	0 00026	+ 1 1
36	35	1 2
44	45	1 4
52	57	1 5
60	69	1 6
1 68	0 00082	+ 1 6
76	95	1 7
84	109	1 7
92	1 2	1 6
2 00	134	1 5
2 08	0 00146	+ 1 5
16	158	1 4
24	168	1 1
32	176	1 0
40	184	0 9
2 48	0 00189	+ 0 6
56	193	0 4
64	195	+ 0 1
72	195	- 0 1
80	193	0 4
2 88	0 00189	- 0 6
96	184	0 8
3 04	177	1 0
12	168	1 1
20	159	1 3
3 28	0 00147	- 1 5
36	135	1 5
44	1 3	1 6
52	110	1 7
60	96	1 7
3 68	0 00083	- 1 6
76	70	1 6
84	58	1 5
92	46	1 4
4 00	0 00036	- 1 2

C t t + 00 00

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

Equations of the Variation of the Radius Vector, Doubled.

XXXIII

1	2	3
A	Equa- tion	$\Delta$ od·r
d		
0·0	-·00373	-0,2
·2	375	1,8
·4	380	3,5
·6	389	5,5
·8	402	7,3
1·0	418	8,8
1·2	-·00437	-10,3
·4	459	11,5
·6	483	12,3
·8	508	12,0
2·0	531	11,3
2·2	-·00553	-10,5
·4	573	9,0
·6	589	7,3
·8	602	5,5
3·0	611	3,8
3·2	-·00617	-2,3
·4	620	-1,0
·6	621	+0,5
·8	618	2,0
4·0	613	3,5
4·2	-·00604	+5,3
·4	592	6,8
·6	577	8,5
·8	558	10,0
5·0	537	11,0
5·2	-·00514	+12,0
·4	489	12,3
·6	465	11,5
·8	443	10,5
6·0	423	9,3
6·2	-·00406	+7,5
·4	393	6,0
·6	382	4,3
·8	376	2,3
7·0	373	+0,5
7·2	-·00374	-1,5
·4	379	3,0
·6	386	4,8
·8	398	7,0
8·0	414	8,8
8·2	-·00433	-10,0
·4	454	11,0
·6	477	11,8
·8	501	12,0
9·0	525	11,8
9·2	-·00548	-10,8
·4	568	9,3
·6	585	7,5
·8	598	6,0
10·0	-·00609	-4,5

Constant: -0·00500.

XXXIV

1	2	3
B	Equa- tion	$\Delta$ od·r
d		
0·0	+·00015	0,0
0·4	17	+1,1
0·8	24	2,3
1·2	35	2,8
1·6	46	2,8
2·0	57	2,3
2·4	+·00064	+1,4
2·8	68	+0,5
3·2	68	-0,8
3·6	63	1,8
4·0	54	2,4
4·4	+·00044	-2,8
4·8	32	2,8
5·2	22	2,3
5·6	14	1,5
6·0	10	-0,6
6·4	+·00009	+0,4
6·8	13	1,3
7·2	19	2,0
7·6	29	2,6
8·0	40	2,8
8·4	+·00051	+2,5
8·8	60	1,9
9·2	66	+1,3
9·6	69	0,0
10·0	66	-1,3
10·4	+·00059	-1,9
10·8	49	2,6
11·2	38	2,8
11·6	27	2,4
12·0	19	1,5
12·4	+·00015	-0,4
12·8	16	+0,9
13·2	22	1,9
13·6	31	2,5
14·0	42	2,8
14·4	+·00053	+2,5
14·8	62	1,9
15·2	68	+0,8
15·6	68	-0,5
16·0	64	1,3
16·4	+·00057	-1,9
16·8	47	2,8
17·2	35	2,8
17·6	25	2,4
18·0	16	1,8
18·4	+·00011	-0,9
18·8	9	0,0
19·2	11	+1,0
19·6	17	2,0
20·0	+·00027	+3,0

Constant: +0·00040.

XXXV

1	2	3	1	2	3
D	Equa- tion	$\Delta$	D	Equa- tion	$\Delta$
d			d		
0·0	+·00017	0	5·0	+·00416	-25
·1	18	+2	·1	390	26
·2	22	4	·2	364	26
·3	27	6	·3	338	27
·4	35	9	·4	311	27
·5	46	11	·5	285	27
0·6	+·00058	+13	5·6	+·00258	-27
·7	72	15	·7	232	26
·8	89	17	·8	207	25
·9	107	18	·9	183	24
1·0	126	20	6·0	160	23
1·1	+·00148	+22	6·1	+·00138	-21
·2	170	23	·2	118	20
·3	194	24	·3	99	19
·4	218	25	·4	81	17
·5	244	26	·5	66	15
1·6	+·00270	+26	6·6	+·00052	-13
·7	296	27	·7	41	10
·8	323	27	·8	32	8
·9	349	27	·9	25	6
2·0	376	27	7·0	20	4
2·1	+·00402	+26	7·1	+·00017	-2
·2	427	25	·2	17	+1
·3	452	24	·3	19	4
·4	475	23	·4	24	6
·5	497	22	·5	31	8
2·6	+·00518	+20	7·6	+·00040	+10
·7	537	19	·7	51	12
·8	555	17	·8	64	14
·9	571	15	·9	79	16
3·0	585	13	8·0	97	18
3·1	+·00597	+11	8·1	+·00116	+19
·2	606	9	·2	136	21
·3	614	7	·3	158	23
·4	619	4	·4	181	24
·5	622	+2	·5	205	25
3·6	+·00623	-1	8·6	+·00230	+26
·7	621	3	·7	256	26
·8	617	5	·8	282	26
·9	611	7	·9	308	27
4·0	602	9	9·0	335	27
4·1	+·00592	-11	9·1	+·00361	+27
·2	579	14	·2	388	26
·3	564	16	·3	413	25
·4	547	18	·4	438	24
·5	529	19	·5	462	23
4·6	+·00509	-21	9·6	+·00485	+22
·7	488	22	·7	507	21
·8	465	23	·8	527	19
·9	441	24	·9	545	18
5·0	+·00416	-25	10·0	+·00562	+16

Applied Constant: +0·00320.

XXXVI

1	2	3
E	Equa- tion	$\Delta$ od·r
d		
0·0	+·00011	0,0
·2	13	+2,0
·4	19	4,0
·6	29	5,8
·8	42	7,3
1·0	58	8,5
1·2	+·00076	+9,8
·4	97	10,8
·6	119	11,0
·8	141	11,3
2·0	164	11,3
2·2	+·00186	+10,5
·4	206	9,5
·6	224	8,5
·8	240	7,3
3·0	253	5,5
3·2	+·00262	+3,5
·4	267	+1,8
·6	269	0,0
·8	267	-2,3
4·0	260	4,3
4·2	+·00250	-5,8
·4	237	7,5
·6	220	9,0
·8	201	9,8
5·0	181	10,5
5·2	+·00159	-11,3
·4	136	11,3
·6	114	11,0
·8	92	10,5
6·0	72	9,5
6·2	+·00054	-8,5
·4	38	7,0
·6	26	5,3
·8	17	3,5
7·0	12	-1,5
7·2	+·00011	+0,5
·4	14	2,5
·6	21	4,3
·8	31	6,0
8·0	45	7,8
8·2	+·00062	+9,0
·4	81	10,0
·6	102	10,8
·8	124	11,0
9·0	146	11,3
9·2	+·00169	+11,0
·4	190	10,3
·6	210	9,5
·8	228	8,3
10·0	+·00243	+6,8

Constant: +0·00040.

The sum of the Equations of Tables XXXIII-XXXVI gives the Variation.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XXXVII

Equation of Latitude

Argument O

O	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	O	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	O	Equation	$\Delta$	$\frac{1}{2}\Delta^2$	O	Equation	$\Delta$	$\frac{1}{2}\Delta^2$
0 00	9000	+740		1 00	1 54888	+474	- 3	2 00	1 72909	-137	- 3	3 00	1 3 918	-648	- 2
02	91479	74	0	02	1 558 6	464	3	02	1 7 62	150	3	02	1 9617	654	2
04	9 959	739	0	04	1 56743	453	3	04	1 7 311	162	3	04	1 8304	660	
06	94437	739		06	1 57639	443	3	06	1 71973	175	3	06	1 6978	666	1
08	95914	738	0	08	1 58515	433	3	08	1 71610	188	3	08	1 564	671	1
10	97388	737	0	10	1 59369	4	3	10	1 71	1	3	10	1 4 94	676	1
0 12	0 98861	+736		1 12	1 60 0	+411	- 3	2 12	1 70808	-213	- 3	3 12	1 2 937	-681	- 1
14	1 0 331	734	0	14	1 61013	400	3	14	1 70369	6	3	14	1 21569	686	1
16	1 01798	733	0	16	1 61803	389	3	16	1 69905	38	3	16	1 0192	691	1
18	1 3 6	731	- 1	18	1 6 57	378	3	18	1 69417	250	3	18	1 18806	696	1
20	1 047 1	7 8	1	20	1 63315	367	3	20	1 68905	263	3	20	1 17410	700	1
0 22	1 06176	+7 6	- 1	1 22	1 64038	+356	- 3	2 22	1 68368	-275	- 3	3 22	1 16005	-704	- 1
24	1 76 6	7 4	1	24	1 64737	344	3	24	1 67806	287	3	24	1 14593	708	1
26	1 9 69	7 1	1	26	1 65414	333	3	26	1 67 1	99	3	26	1 13174	711	1
28	1 105 8	718	1	28	1 66067	3 1	3	28	1 66611	311	3	28	1 11748	715	1
30	1 11941	715	1	30	1 66697	309	3	30	1 65979	3	3	30	1 10315	718	1
0 32	1 13367	+711	- 1	1 32	1 6730	+297	- 3	2 32	1 653 2	-334	- 3	3 32	1 08876	-721	- 1
34	1 14786	708	1	34	1 67884	85	3	34	1 64643	346	3	34	1 07431	724	1
36	1 16197	704	1	36	1 68441	73	3	36	1 6394	357	3	36	1 05980	7 7	1
38	1 17600	700	1	38	1 68975	261	3	38	1 63 15	368	3	38	1 045 4	7 9	1
40	1 18995	695	1	40	1 69484	49	3	40	1 6 467	380	3	40	1 03 64	731	1
0 42	1 0380	+690	- 1	1 42	1 69969	+ 36	- 3	2 42	1 61696	-391	- 3	3 42	1 016 0	-733	- 1
44	1 1756	686	1	44	1 704 9	224	3	44	1 609 4	402	3	44	1 00133	735	0
46	1 231	681	1	46	1 70863	211	3	46	1 60089	413	3	46	0 98662	736	0
48	1 4479	676	1	48	1 71 73	199	3	48	1 59 53	4 3	3	48	97189	737	0
50	1 58 5	670		50	1 71659	187	3	50	1 58396	434	3	50	95713	738	0
0 52	1 7160	+664	- 1	1 52	1 7 019	+174	- 3	2 52	1 57518	-445	- 3	3 52	0 94 37	-739	0
54	1 2848	659	1	54	1 7 354	161	3	54	1 56618	455	3	54	9 757	740	
56	1 29794	653		56	1 7 663	148	3	56	1 55699	465	3	56	91 78	740	0
58	1 31094	646	2	58	1 72947	135	3	58	1 54758	475	3	58	89799	740	0
60	1 3 381	640	2	60	1 73 4	1	3	60	1 53799	485	3	60	88319	740	0
0 62	1 33655	+634	- 2	1 62	1 73436	+110	- 3	2 62	1 5282	-495	- 2	3 62	0 86841	-739	0
64	1 34915	6 7	2	64	1 73643	97	3	64	1 51821	504	2	64	85362	739	0
66	1 36161	620		66	1 73824	84	3	66	1 50804	513	2	66	83886	738	0
68	1 37394	613		68	1 73978	7	3	68	1 49768	5 3	2	68	8 411	737	0
70	1 38611	605		70	1 741 8	58	3	70	1 48713	53	2	70	80939	736	0
0 72	1 39814	+598	-	1 72	1 74210	+ 45	- 3	2 72	1 47640	-541	- 2	3 72	0 79469	-735	0
74	1 410 1	590		74	1 74 86	32	3	74	1 46549	55		74	78001	733	+ 1
76	1 4 173	58		76	1 74336	19	3	76	1 45441	558	2	76	76538	730	1
78	1 433 8	574	2	78	1 74360	+ 6	3	78	1 44316	567	2	78	75 80	728	1
80	1 44468	566	2	80	1 74358	- 8	3	80	1 43174	575	2	80	73626	726	1
0 82	1 45591	+558	-	1 82	1 74330	- 20	- 3	2 82	1 42016	-583	- 2	3 82	0 7 178	-7 3	+ 1
84	1 46698	549		84	1 74 77	33	3	84	1 4084	591	2	84	70734	721	1
86	1 47786	540	2	86	1 74197	47	3	86	1 3965	599	2	86	69296	718	1
88	1 48856	531		88	1 74 90	6	3	88	1 38448	606	2	88	67864	714	1
90	1 49908	52		90	1 73958	73	3	90	1 37227	614	2	90	66439	711	1
0 92	1 5094	+51	- 2	1 92	1 73799	- 86	- 3	2 92	1 35993	-6 1	- 2	3 92	0 65022	-7 7	+ 1
94	1 51957	503		94	1 73616	98	3	94	1 34745	6 8	2	94	63612	703	1
96	1 5 953	493		96	1 734 6	111	3	96	1 33483	635	2	96	6 11	699	1
98	1 5393	484		98	1 73171	1 4	3	98	1 32207	641	2	98	60818	695	1
1 00	1 54888	+474	- 3	2 00	1 7 9 9	-137	- 3	3 00	1 30918	-648	- 2	4 00	0 59433	-690	+ 1

Appl d C t t + 000

F Elp d th g m t f T bl XLV th Eq ti fthi T bl

T bl XXXVIII XLII F th th ph m T bl XLIII XLIV m t l i ppl d

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XXXVII continued

Equation of Latitude

Argument O

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
O	Equation	$\Delta$ 0 <sup>d</sup> .01	$\frac{1}{2} \Delta^2$	O	Equation	$\Delta$ 0 <sup>d</sup> .01	$\frac{1}{2} \Delta^2$	O	Equation	$\Delta$ 0 <sup>d</sup> .01	$\frac{1}{2} \Delta^2$	O	Equation	$\Delta$ 0 <sup>d</sup> .01	$\frac{1}{2} \Delta^2$
d				d				d				d			
4.00	0.59433	-690	+ 1	5.00	0.09967	-235	+ 3	6.00	0.18410	+392	+ 3	7.00	0.78599	+733	0
.02	.58058	685	1	.02	.9510	222	3	.02	.19206	403	3	.02	.80067	735	0
.04	.56692	680	1	.04	.9078	210	3	.04	.20023	414	3	.04	.81538	736	0
.06	.55338	675	1	.06	.8671	197	3	.06	.20862	425	3	.06	.83012	737	0
.08	.53993	670	1	.08	.8289	185	3	.08	.21722	436	3	.08	.84487	738	0
.10	.52660	664	2	.10	.7933	172	3	.10	.22604	446	3	.10	.85965	739	0
4.12	0.51338	-658	+ 2	5.12	0.07602	-159	+ 3	6.12	0.23505	+456	+ 3	7.12	0.87443	+740	0
.14	.50028	652	2	.14	.7296	147	3	.14	.24427	466	3	.14	.88924	740	0
.16	.48730	646	2	.16	.7016	134	3	.16	.25369	476	3	.16	.90403	740	0
.18	.47445	639	2	.18	.6761	121	3	.18	.26332	486	3	.18	.91882	740	0
.20	.46173	633	2	.20	.6533	108	3	.20	.27314	496	2	.20	.93361	739	0
4.22	0.44915	-626	+ 2	5.22	0.06330	-95	+ 3	6.22	0.28315	+505	+ 2	7.22	0.94838	+739	0
.24	.43670	619	2	.24	.6155	82	3	.24	.29335	515	2	.24	.96315	738	0
.26	.42440	612	2	.26	.6004	69	3	.26	.30374	524	2	.26	.97789	737	0
.28	.41224	604	2	.28	.5879	56	3	.28	.31431	533	2	.28	.99262	736	0
.30	.40024	597	2	.30	.5779	43	3	.30	.32506	542	2	.30	1.00732	734	- 1
4.32	0.38838	-589	+ 2	5.32	0.05706	-30	+ 3	6.32	0.33599	+551	+ 2	7.32	1.02198	+732	- 1
.34	.37669	581	2	.34	.5659	17	3	.34	.34709	560	2	.34	1.03660	730	- 1
.36	.36513	573	2	.36	.5638	- 4	3	.36	.35837	568	2	.36	1.05118	728	- 1
.38	.35377	564	2	.38	.5643	+ 9	3	.38	.36981	576	2	.38	1.06572	726	- 1
.40	.34256	557	2	.40	.5674	22	3	.40	.38142	585	2	.40	1.08020	723	- 1
4.42	0.33152	-548	+ 2	5.42	0.05731	+ 36	+ 3	6.42	0.39319	+592	+ 2	7.42	1.09462	+720	- 1
.44	.32066	539	2	.44	.5816	49	3	.44	.40510	600	2	.44	1.10899	717	- 1
.46	.30998	530	2	.46	.5925	61	3	.46	.41718	608	2	.46	1.12330	714	- 1
.48	.29948	520	2	.48	.6060	74	3	.48	.42940	615	2	.48	1.13755	710	- 1
.50	.28917	511	2	.50	.6221	87	3	.50	.44177	622	2	.50	1.15171	706	- 1
4.52	0.27905	-501	+ 2	5.52	0.06409	+100	+ 3	6.52	0.45427	+629	+ 2	7.52	1.16580	+703	- 1
.54	.26912	492	2	.54	.6623	113	3	.54	.46691	635	2	.54	1.17981	699	- 1
.56	.25937	482	3	.56	.6862	126	3	.56	.47968	642	2	.56	1.19374	694	- 1
.58	.24983	472	3	.58	.7126	139	3	.58	.49258	648	2	.58	1.20757	689	- 1
.60	.24049	462	3	.60	.7417	152	3	.60	.50561	655	2	.60	1.22130	684	- 1
4.62	0.23135	-451	+ 3	5.62	0.07733	+165	+ 3	6.62	0.51876	+660	+ 1	7.62	1.23493	+679	- 1
.64	.22241	442	3	.64	.8075	177	3	.64	.53202	666	2	.64	1.24847	674	- 1
.66	.21369	431	3	.66	.8442	190	3	.66	.54540	672	1	.66	1.26189	669	- 1
.68	.20517	421	3	.68	.8834	202	3	.68	.55889	677	1	.68	1.27521	663	- 2
.70	.19687	410	3	.70	.9251	215	3	.70	.57248	682	1	.70	1.28841	657	- 2
4.72	0.18878	-399	+ 3	5.72	0.09694	+228	+ 3	6.72	0.58617	+687	+ 1	7.72	1.30149	+651	- 2
.74	.18092	388	3	.74	.10161	240	3	.74	.59996	692	1	.74	1.31445	645	- 2
.76	.17328	376	3	.76	.10652	252	3	.76	.61384	696	1	.76	1.32728	638	- 2
.78	.16587	365	3	.78	.11167	264	3	.78	.62781	701	1	.78	1.33998	632	- 2
.80	.15867	354	3	.80	.11708	276	3	.80	.64186	705	1	.80	1.35255	625	- 2
4.82	0.15170	-343	+ 3	5.82	0.12272	+288	+ 3	6.82	0.65599	+708	+ 1	7.82	1.36498	+618	- 2
.84	.14497	331	3	.84	.12861	300	3	.84	.67019	712	1	.84	1.37726	611	- 2
.86	.13847	319	3	.86	.13473	312	3	.86	.68447	716	1	.86	1.38940	603	- 2
.88	.13221	307	3	.88	.14110	324	3	.88	.69881	719	1	.88	1.40138	596	- 2
.90	.12618	295	3	.90	.14769	335	3	.90	.71321	721	1	.90	1.41322	588	- 2
4.92	0.12040	-283	+ 3	5.92	0.15451	+346	+ 3	6.92	0.72766	+724	+ 1	7.92	1.42489	+580	- 2
.94	.11485	271	3	.94	.16156	358	3	.94	.74218	727	1	.94	1.43641	572	- 2
.96	.10955	259	3	.96	.16885	370	3	.96	.75674	729	+ 1	.96	1.44775	563	- 2
.98	.10448	247	3	.98	.17637	381	3	.98	.77135	731	0	.98	1.45893	555	- 2
5.00	0.09967	-235	+ 3	6.00	0.18410	+392	+ 3	7.00	0.78599	+733	0	8.00	1.46994	+546	- 2

Applied Constant: +0.90000.

For Eclipses, and as the argument of Table XLV, the Equation of this Table must be supplemented by those of Tables XXXVIII-XLIII. For the other phenomena Tables XLIII, XLIV must also be applied.

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

XXXVIII

Equation of Latitude

Argument S

S	Equation	3		S	Equation	3		S	Equation	3		S	Equation	3	
		$\Delta$	$\frac{1}{2} \Delta^2$			$\Delta$	$\frac{1}{2} \Delta^2$			$\Delta$	$\frac{1}{2} \Delta^2$			$\Delta$	$\frac{1}{2} \Delta^2$
<sup>d</sup> 0 00	0 08 00	+43 8	0	2 00	0 1 897	- 8 1	- 2	4 00	0 06 190	-40 8	+ 1	<sup>d</sup> 6 00	0 03773	+23 3	+ 2
04	8 175	43 8	0	04	1286	9 6		04	60 8	40	1	04	3868	24 4	
08	8350	43 8		08	1 8 0	11 1		08	5868	39 6	1	08	3968	25 6	
12	85 5	43 5	0	12	12773	1 5		12	5711	38 9	1	12	4073	6 9	1
16	8698	43 3	0	16	1 7	14 1	2	16	5557	38 1	1	16	4183	8 0	2
20	8871	43 0		20	1 66	15 5		20	5406	37 4	1	20	4297	29 3	1
0 24	0 0904	+4 8	0	2 24	12596	-16 8	-	4 24	0 05 58	-36 5	+ 1	6 24	0 04417	+3 4	+ 1
28	9 13	4 5	- 1	28	12526	18 3		28	5114	35 6	1	28	4540	31 5	1
32	938	42 1	1	32	1 45	19 8	2	32	4973	34 8	1	32	4669	32 6	1
36	9550	41 6	1	36	12368	21 0	2	36	4836	33 9	1	36	4801	33 5	1
40	9715	41 0	1	40	1 28	2 3		40	4702	3 8	1	40	4937	34 4	1
0 44	0 09878	+40 5	- 1	2 44	0 12190	- 3 6	- 2	4 44	0 04574	-31 6	+ 1	6 44	0 05 76	+35 5	+ 1
48	1 039	40 0	1	48	1 093	5 1		48	4449	30 8		48	5 1	36 5	1
52	10198	39 3	1	52	11989	6 5		52	4328	29 6		52	5368	37 1	1
56	1 353	38 5	1	56	11881	27 5		56	4 12	28 4	1	56	5518	37 8	1
60	105 6	37 9	1	60	11769	28 5	1	60	4101	27 3		60	5670	38 6	1
0 64	0 10656	+37 0	- 1	2 64	0 11653	-29 8	- 2	4 64	0 03994	-26 1	+ 2	6 64	0 05827	+39 4	+ 1
68	10802	36 1	1	68	11531	30 9	1	68	3892	24 8		68	5985	40 0	1
72	10945	35 3	1	72	11406	31 9	1	72	3796	23 5	2	72	6147	40 6	1
76	11084	34 4	1	76	11276	33 0	1	76	3704	22 1	2	76	6310	41 1	1
80	1122	33 5	1	80	1114	33 9	1	80	3619	20 8	2	80	6476	41 8	+ 1
0 84	0 1135	+3 4	- 1	2 84	0 11005	-35 0	- 1	4 84	0 03538	-19 5	+	6 84	0 06644	+42 5	0
88	11479	31 3	1	88	10862	35 9	1	88	3463	18 1		88	6815	42 8	0
92	1160	30 3	1	92	10718	36 5	1	92	3393	16 8	2	92	6986	4 8	0
96	11721	9 3	1	96	10570	37 4	1	96	3329	15 3	2	96	7157	43 0	0
1 00	11836	28 0		3 00	10419	38 3	1	5 00	3 71	13 8	2	7 00	7330	43 3	0
1 04	0 11945	+26 6	- 2	3 04	0 1 64	-39 0	- 1	5 04	0 03 19	-12 3	+	7 04	0 07503	+43 5	0
08	12 49	25 5	2	08	10107	39 6	1	08	3173	10 9	2	08	7678	43 8	0
12	1 149	4 3		12	9947	40 3	1	12	313	9 5	2	12	7853	43 8	0
16	1 243	2 9		16	9785	40 9	1	16	3097	7 9	2	16	80 8	43 8	0
20	1233	21 6		20	9620	41 5	1	20	3069	6 3	2	20	8 03	43 8	0
1 24	0 1 416	+ 0 4	-	3 24	0 09453	-41 9	- 1	5 24	0 03047	- 4 8	+ 2	7 24	0 08378	+43 8	0
28	1 495	19 0		28	9 85	42 3	1	28	3031	3 3	2	28	8553	43 5	0
32	1 568	17 5		32	9115	42 6	1	32	3021	1 6		32	8726	43 3	0
36	12635	16		36	8944	43 0	- 1	36	3018	- 0 1	2	36	8899	43 0	0
40	1 696	14 5		40	8771	43 3	0	40	30 0	+ 1 3	2	40	9070	42 8	0
1 44	1 751	+13 1	-	3 44	0 08598	-43 4	0	5 44	0 030 8	+ 2 8	+ 2	7 44	0 09241	+42 5	0
48	1 8 1	11 8		48	8424	43 6	0	48	304	4 4	2	48	9410	4	- 1
52	1 845	10 3	2	52	8249	43 8	0	52	3 63	6		52	9577	41 4	1
56	1 883	8 8		56	8074	43 8	0	56	3090	7 5	2	56	9741	40 9	1
60	1 915	7 3	2	60	7899	43 8	0	60	3123	8 9	2	60	9904	40 4	1
1 64	0 1 941	+ 5 6		3 64	0 07724	-43 8	0	5 64	0 03161	+10 4	+	7 64	0 10064	+39 8	- 1
68	1 960	4 1		68	7549	43 6	0	68	3206	12 0	2	68	10222	39 1	1
72	1 974	2 6		72	7375	43 4	0	72	3 57	13 4		72	10377	38 4	1
76	1 981	+ 1 1	2	76	7 0	43 3	0	76	3313	14 9		76	10529	37 8	1
80	12983	- 0 4	2	80	70 9	43 0	+ 1	80	3376	16 5	2	80	10679	37 0	1
1 84	0 12978	- 0	-	3 84	0 06858	-4 6	+ 1	5 84	0 03445	+17 8	+ 2	7 84	0 10825	+36 0	- 1
88	1 967	3 5		88	6688	4 3	1	88	3518	19 1	2	88	10967	35 3	1
92	1 950	5 0	2	92	6520	41 8	1	92	3598	20 5		92	11107	34 5	1
96	1 9 7	6 6	2	96	6354	41 3	1	96	368	1 9		96	11243	33 3	2
2 00	0 1 897	- 8 1	- 2	4 00	0 619	-40 8	+ 1	6 00	0 03773	+23 3	+	8 00	0 11373	+32 0	- 2

Appl d C t t + 8



# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Latitude

XXXIX

XL

1	2	3	1	2	3
T	Equation	$\Delta_{0d \cdot 01}$	T	Equation	$\Delta_{0d \cdot 01}$
d			d		
0'00	0'00900	-3,9	4'00	0'01063	+3,7
08	869	3,9	08	1092	3,6
16	837	3,9	16	1120	3,4
24	806	3,8	24	1147	3,3
32	776	3,8	32	1172	3,1
40	746	3,7	40	1196	2,9
0'48	0'00717	-3,6	4'48	0'01219	+2,8
56	689	3,4	56	1240	2,6
64	662	3,3	64	1260	2,4
72	636	3,2	72	1278	2,1
80	611	3,0	80	1294	1,8
0'88	0'00588	-2,8	4'88	0'01307	+1,6
96	566	2,6	96	1319	1,4
1'04	546	2,4	5'04	1329	1,1
12	528	2,2	12	1337	0,8
20	511	1,9	20	1342	0,6
1'28	0'00497	-1,7	5'28	0'01346	+0,3
36	484	1,4	36	1347	0,0
44	474	1,2	44	1346	-0,3
52	465	0,9	52	1343	0,6
60	459	0,6	60	1337	0,8
1'68	0'00455	-0,4	5'68	0'01330	-1,1
76	453	-0,1	76	1320	1,4
84	454	+0,2	84	1308	1,6
92	456	0,4	92	1294	1,8
2'00	461	0,7	6'00	1279	2,1
2'08	0'00468	+1,0	6'08	0'01261	-2,3
16	477	1,3	16	1242	2,5
24	488	1,5	24	1221	2,8
32	501	1,8	32	1198	2,9
40	516	2,0	40	1174	3,1
2'48	0'00533	+2,3	6'48	0'01148	-3,3
56	552	2,5	56	1121	3,4
64	573	2,7	64	1094	3,5
72	595	2,9	72	1065	3,7
80	619	3,1	80	1035	3,8
2'88	0'00644	+3,2	6'88	0'01005	-3,8
96	670	3,4	96	974	3,9
3'04	698	3,5	7'04	943	3,9
12	726	3,6	12	912	3,9
20	755	3,7	20	880	3,9
3'28	0'00785	+3,8	7'28	0'00849	-3,9
36	816	3,9	36	818	3,9
44	847	3,9	44	787	3,8
52	878	3,9	52	757	3,7
60	910	3,9	60	728	3,6
3'68	0'00941	+3,9	7'68	0'00699	-3,5
76	972	3,9	76	672	3,4
84	1003	3,8	84	645	3,3
92	1033	3,8	92	620	3,1
4'00	0'01063	+3,7	8'00	0'00596	-2,9

Applied Constant: +0'00900.

1	2	3	1	2	3	1	2	3
U	Equation	$\Delta_{0d \cdot 01}$	U	Equation	$\Delta_{0d \cdot 01}$	U	Equation	$\Delta_{0d \cdot 00}$
d			d			d		
0'00	0'01000	+8,6	2'50	0'01790	-5,0	5'00	0'00076	-2,7
05	1043	8,5	55	1764	5,3	05	63	2,4
10	1085	8,5	60	1737	5,6	10	52	1,9
15	1128	8,5	65	1708	5,9	15	44	1,6
20	1170	8,4	70	1678	6,1	20	36	1,3
25	1212	8,4	75	1647	6,4	25	31	0,8
0'30	0'01254	+8,3	2'80	0'01614	-6,7	5'30	0'00028	-0,5
35	1295	8,1	85	1580	6,8	35	26	-0,2
40	1335	8,0	90	1546	7,1	40	26	+0,3
45	1375	8,0	95	1509	7,3	45	29	0,7
50	1415	7,8	3'00	1473	7,4	50	33	1,0
0'55	0'01453	+7,5	3'05	0'01435	-7,7	5'55	0'00039	+1,4
60	1490	7,3	10	1396	7,8	60	47	1,7
65	1526	7,2	15	1357	7,9	65	56	2,1
70	1562	7,0	20	1317	8,1	70	68	2,5
75	1596	6,7	25	1276	8,2	75	81	2,8
0'80	0'01629	+6,5	3'30	0'01235	-8,3	5'80	0'00096	+3,2
85	1661	6,3	35	1193	8,4	85	113	3,6
90	1692	6,0	40	1151	8,4	90	132	3,9
95	1721	5,8	45	1109	8,5	95	152	4,1
1'00	1750	5,5	50	1066	8,6	6'00	173	4,5
1'05	0'01776	+5,1	3'55	0'01023	-8,6	6'05	0'00197	+4,8
10	1801	4,8	60	980	8,6	10	221	5,1
15	1824	4,6	65	937	8,5	15	248	5,5
20	1847	4,3	70	895	8,5	20	276	5,7
25	1867	3,9	75	852	8,4	25	305	6,0
1'30	0'01886	+3,6	3'80	0'00811	-8,3	6'30	0'00336	+6,3
35	1903	3,2	85	769	8,3	35	368	6,5
40	1918	2,8	90	728	8,2	40	401	6,7
45	1931	2,4	95	687	8,1	45	435	6,9
50	1942	2,1	4'00	647	8,0	50	470	7,2
1'55	0'01952	+1,8	4'05	0'00607	-7,9	6'55	0'00507	+7,4
60	1960	1,5	10	568	7,7	60	544	7,6
65	1967	1,1	15	530	7,5	65	583	7,8
70	1971	0,7	20	493	7,3	70	622	7,8
75	1974	+0,3	25	457	7,1	75	661	8,0
1'80	0'01974	-0,1	4'30	0'00422	-6,8	6'80	0'00702	+8,2
85	1973	0,5	35	389	6,6	85	743	8,3
90	1969	0,8	40	356	6,4	90	785	8,4
95	1964	1,2	45	325	6,2	95	827	8,3
2'00	1957	1,6	50	294	5,9	7'00	868	8,4
2'05	0'01948	-1,9	4'55	0'00266	-5,6	7'05	0'00911	+8,5
10	1938	2,3	60	238	5,4	10	953	8,5
15	1925	2,7	65	212	5,1	15	996	8,6
20	1911	3,0	70	187	4,7	20	1039	8,6
25	1895	3,3	75	165	4,3	25	1082	8,5
2'30	0'01878	-3,7	4'80	0'00144	-4,1	7'30	0'01124	+8,4
35	1858	4,1	85	124	3,8	35	1166	8,5
40	1837	4,4	90	106	3,4	40	1209	8,4
45	1814	4,7	95	90	3,0	45	1250	8,3
2'50	0'01790	-5,0	5'00	0'00076	-2,7	7'50	0'01292	+8,2

Applied Constant: +0'00000.

## Tables of Longitude, Latitude, and Radius Vector

### Argument V

V	Equation	V	Equation	V	Equation	V	Equation
00	0 00080	20	0 0130	40	0 0006	60	0 00036
1	85	1	1 9	1	58	1	39
2	89	2	128	2	54	2	41
3	93	3	126	3	51	3	44
4	98	4	124	4	47	4	48
5	1	5	122	5	43	5	52
06	0 00106	26	0 00119	46	0 00 40	66	0 00056
7	109	7	116	7	38	7	59
8	113	8	112	8	36	8	63
9	116	9	109	9	33	9	68
10	119	30	106	50	31	70	72
11	0 00121	31	0 001 1	51	0 00030	71	0 00076
2	1 4	2	97	2	30	2	81
3	126	3	93	3	29	3	86
4	1 8	4	88	4	9	4	90
5	13	5	84	5	29	5	94
16	0 00130	36	0 00080	56	0 00030	76	0 00098
7	131	7	75	7	31	7	103
8	131	8	70	8	32	8	107
9	131	9	66	9	34	9	110
20	0 00130	40	0 0062	60	0 00036	80	0 00114

Appl d C t t - 8

### Arguments $O, \alpha$

$\begin{smallmatrix} \text{O} \\ a \end{smallmatrix}$	$0^d 0^d 0^d 4^d 8^d$	$1^d 2^d 1^d 6^d 2^d 0^d$	$2^d 4^d 2^d 8^d 3^d 2^d$	$3^d 6^d 4^d 0^d 4^d 4^d$	$4^d 8^d 5^d 2^d 5^d 6^d$	$6^d 0^d 6^d 4^d 6^d 8^d$	$7^d 1^d 2^d 7^d 6^d 8^d 0^d$
0	2 20 21	1 1 21	21 1 0	20 20 19	19 19 19	19 19 20	0 20 0
200	5 4 3	3 22 20	19 17 16	15 16 17	17 18 0	21 23 24	25 24 23
400	29 28 27	4 3 19	16 13 1	11 1 14	16 18 1	24 27 28	29 28 27
600	3 31 9	6 3 19	14 11 9	8 9 11	14 18 1	6 9 31	32 31 9
800	35 34 31	7 3 17	13 9 6	5 6 9	13 18 23	7 31 34	35 34 31
1000	36 35 32	28 3 17	12 8 5	4 5 8	12 18 3	28 3 35	36 35 32
1200	36 35 3	28 3 17	12 8 5	4 5 8	12 18 3	28 32 35	36 35 32
1400	34 33 31	27 2 17	13 9 7	6 7 9	13 18 3	27 31 33	34 33 31
1600	3 31 29	26 1 17	14 11 9	8 9 11	14 19 23	26 29 31	32 31 29
1800	8 8 26	4 21 17	16 14 1	1 1 14	16 0 3	4 6 28	28 28 26
2000	4 24 3	21 20 18	17 17 16	16 16 17	19 21 2	23 3 24	24 4 23
2200	19 19 19	19 19 19	19 0 1	21 1 1	1 21 21	1 20 19	19 19 19
2400	15 15 16	16 18 20	22 4 25	5 5 4	24 22 20	18 16 15	15 15 16
2600	11 11 13	15 17 21	25 27 29	29 9 7	5 22 19	15 13 11	11 11 13
2800	7 8 10	14 17 1	26 30 32	33 3 30	6 23 19	14 10 8	7 8 10
3000	5 6 9	13 17 23	7 31 34	35 34 31	7 2 17	13 9 6	5 6 9
3200	4 5 8	1 17 3	28 32 35	36 35 3	28 2 17	1 8 5	4 5 8
3400	4 5 8	1 17 3	8 3 35	36 35 3	8 17	12 8 5	4 5 8
3600	6 7 10	13 18 3	27 30 33	34 33 30	27 22 17	13 10 7	6 7 10
3800	9 10 1	14 19 23	26 8 30	31 30 8	6 1 17	14 12 10	9 1 12
4000	13 13 14	16 0	24 6 7	7 27 26	24 20 18	16 14 13	13 13 14
4200	17 17 18	19 0 21	3 3	3 3	1 19 18	17 18 17	17 17 18
4400	2 21	1 21	0 19	18 19 18	18 19 19	0 20 21	22 21 21
4600	26 26 5	24 0	18 15 14	14 14 15	16 18 20	25 6	26 6 25
4800	30 9 8	5 3 19	15 12 11	10 11 1	15 18 1	5 8 29	30 29 28
5000	33 3 30	27 23 19	13 10 8	8 10	13 17 1	27 30 3	33 3 30

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Th t q l

# SATELLITE III

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Latitude

#### XLIII

##### Occultations and Transits

To correct for the Jovicentric Latitude of the Earth, the Satellite's Latitude as derived from Tables XXXVII-XLII, must be supplemented by the term—

$$\pm .365938 R_1 \sin (\odot - \Omega) / \Delta \quad \begin{cases} +\text{Oc.} \\ -\text{Tr.} \end{cases}$$

(9.563408)

where  $R_1$ ,  $\Delta$  are the Geocentric Distances of the Sun and Jupiter respectively, and  $\Omega$  the Longitude of the Ascending Node of Jupiter's Orbit on the Ecliptic. For Occultations employ the natural sign, for Transits the reversed sign.

#### XLIV

##### Correction of Latitude for Shadows and Transits

1	2	3	4
Lat.	Corr <sup>n</sup> . Sh., Tr.	$\Delta$ 0.01	Lat.
0.00	- .00275 +	2,8	2.00
.05	262	2,8	1.95
.10	248	2,8	.90
.15	234	2,8	.85
.20	220	2,8	.80
.25	207	2,8	.75
0.30	- .00193 +	2,8	1.70
.35	179	2,8	.65
.40	165	2,8	.60
.45	152	2,8	.55
.50	138	2,8	.50
0.55	- .00124 +	2,8	1.45
.60	110	2,8	.40
.65	97	2,8	.35
.70	83	2,8	.30
.75	69	2,8	.25
0.80	- .00055 +	2,8	1.20
.85	42	2,8	.15
.90	28	2,8	.10
.95	- 14 +	2,8	.05
1.00	.00000	2,8	1.00

This Correction to be applied to Latitude as found from Tables XXXVII-XLIII, before using as Argument of the Semi-duration for Shadows and Transits.

#### XLV

##### Angle above Jupiter's Orbit

1	2	3	4
Lat.	Angle	$\Delta$ 0.01	Lat.
0.00	- 3.5743 +	356,5	2.00
.05	3.3960	356,7	1.95
.10	3.2177	356,7	.90
.15	3.0393	356,9	.85
.20	2.8608	357,0	.80
.25	2.6823	357,1	.75
0.30	- 2.5037 +	357,2	1.70
.35	2.3251	357,3	.65
.40	2.1464	357,4	.60
.45	1.9677	357,5	.55
.50	1.7889	357,6	.50
0.55	- 1.6101 +	357,6	1.45
.60	1.4313	357,6	.40
.65	1.2525	357,7	.35
.70	1.0736	357,8	.30
.75	0.8947	357,9	.25
0.80	- 0.7157 +	357,9	1.20
.85	0.5368	357,8	.15
.90	0.3579	357,9	.10
.95	- 0.1790 +	357,9	.05
1.00	0.0000	358,0	1.00

This Table shows the Angle of the Satellite above Jupiter's Orbit, which corresponds to the Latitude as found for Tables XXXVII-XLII.

# SATELLITE III

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## Tables

of the

Synodic Motion,

Duration of the Phenomena of Eclipse,  
Occultation, Transit and Shadow-Transit,

with

Equations for Reduction to the Middle,  
Corrections for Jupiter's Phase,

and

Light-Curve of Eclipse

# SATELLITE III

## Tables of Synodic Motion

### XLVI

1	2	1	2	1	2	1	2	1	2
Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value
° <b>0'000</b>	d '000000	° <b>0'020</b>	d '000398	° <b>0'040</b>	d '000796	° <b>0'060</b>	d '001194	° <b>0'080</b>	d '001593
<b>1</b>	20	<b>21</b>	418	<b>41</b>	816	<b>61</b>	1214	<b>81</b>	1612
<b>2</b>	40	<b>22</b>	438	<b>42</b>	836	<b>62</b>	1234	<b>82</b>	1632
<b>3</b>	60	<b>23</b>	458	<b>43</b>	856	<b>63</b>	1254	<b>83</b>	1652
<b>4</b>	80	<b>24</b>	478	<b>44</b>	876	<b>64</b>	1274	<b>84</b>	1672
<b>5</b>	100	<b>25</b>	498	<b>45</b>	896	<b>65</b>	1294	<b>85</b>	1692
<b>0'006</b>	'000119	<b>0'026</b>	'000518	<b>0'046</b>	'000916	<b>0'066</b>	'001314	<b>0'086</b>	'001712
<b>7</b>	139	<b>27</b>	537	<b>47</b>	936	<b>67</b>	1334	<b>87</b>	1732
<b>8</b>	159	<b>28</b>	557	<b>48</b>	956	<b>68</b>	1354	<b>88</b>	1752
<b>9</b>	179	<b>29</b>	577	<b>49</b>	975	<b>69</b>	1374	<b>89</b>	1772
<b>10</b>	199	<b>30</b>	597	<b>50</b>	995	<b>70</b>	1393	<b>90</b>	1792
<b>0'011</b>	'000219	<b>0'031</b>	'000617	<b>0'051</b>	'001015	<b>0'071</b>	'001413	<b>0'091</b>	'001812
<b>12</b>	239	<b>32</b>	637	<b>52</b>	1035	<b>72</b>	1433	<b>92</b>	1831
<b>13</b>	259	<b>33</b>	657	<b>53</b>	1055	<b>73</b>	1453	<b>93</b>	1851
<b>14</b>	279	<b>34</b>	677	<b>54</b>	1075	<b>74</b>	1473	<b>94</b>	1871
<b>15</b>	299	<b>35</b>	697	<b>55</b>	1095	<b>75</b>	1493	<b>95</b>	1891
<b>0'016</b>	'000319	<b>0'036</b>	'000717	<b>0'056</b>	'001115	<b>0'076</b>	'001513	<b>0'096</b>	'001911
<b>17</b>	338	<b>37</b>	737	<b>57</b>	1135	<b>77</b>	1533	<b>97</b>	1931
<b>18</b>	358	<b>38</b>	756	<b>58</b>	1155	<b>78</b>	1553	<b>98</b>	1951
<b>19</b>	378	<b>39</b>	776	<b>59</b>	1174	<b>79</b>	1573	<b>99</b>	1971
<b>0'020</b>	'000398	<b>0'040</b>	'000796	<b>0'060</b>	'001194	<b>0'080</b>	'001593	<b>0'100</b>	'001991

### XLVII

1	2
Angle	Syn. Value
° <b>0'0</b>	d '000000
<b>1</b>	1991
<b>2</b>	3981
<b>3</b>	5972
<b>4</b>	7963
<b>5</b>	9953
<b>0'6</b>	'011944
<b>7</b>	13935
<b>8</b>	15925
<b>9</b>	17916
<b>10</b>	'019907

These Tables show the time taken to describe a given angle with the Mean Synodic Motion. They are to be used for converting into time the Complement or excess of Jupiter's longitude over that of the Satellite at an assumed approximate time of conjunction.

To allow for the *true* Synodic Motion, modify the entry of the table by adding to it its product by the Variation as taken from Tables XXXIII-XXXVI.

# SATELLITE III

## Tables of the Phenomena

XLVIII

Correction of High Latitudes for the Variation

V L t	010 009 008	007 006 005	004 003 002	001 000 + 001	+ 002 + 003 + 004	+ 005 + 006 + 007	+ 008 + 009 + 010
00	+499 +449 +399	+349 + 99 + 5	+ 00 +150 +10	+5 0 -50	-1 0 -15 -2 0	-250 -299 -349	-399 -449 -499
02	+469 +42 +375	+3 8 + 81 + 34	+188 +141 + 94	+47 0 -47	-94 -141 -188	-34 -281 -328	-375 -422 -469
04	+438 +394 +351	+307 + 63 + 19	+175 +131 + 88	+44 0 -44	-88 -131 -175	-19 -263 -3 7	-351 -394 -438
06	+407 +366 +326	+ 85 + 44 + 04	+163 +1 + 81	+41 0 -41	-81 -1 2 -163	-04 -44 -285	-326 -366 -407
08	+375 +338 +300	+ 63 +2 5 +188	+15 +113 + 75	+38 0 -38	-75 -113 -15	-188 -225 -263	-300 -338 -375
10	+343 +3 9 + 75	+ 40 + 06 +17	+137 +1 3 + 69	+34 0 -34	-69 -1 3 -137	-172 - 6 - 40	-275 -309 -343
12	+311 + 80 +248	+ 17 +186 +155	+1 4 + 93 + 62	+31 0 -31	-6 - 93 -124	-155 -186 -217	-248 - 80 -311
14	+ 77 + 50 +2	+194 +166 +139	+111 + 83 + 55	+28 0 -28	-55 - 83 -111	-139 -166 -194	-222 -250 -277
16	+ 43 + 19 +195	+170 +146 +12	+ 97 + 73 + 49	+24 0 - 4	-49 - 73 - 97	-122 -146 -17	-195 -219 -243
18	+ 09 +188 +167	+146 +1 5 +104	+ 84 + 63 + 4	+ 1 0 - 1	-42 63 - 84	-104 -125 -146	-167 -188 -209
20	+174 +156 +139	+1 +104 + 87	+ 69 + 52 + 35	+17 0 -17	-35 - 52 - 69	-87 -104 -1 2	-139 -156 -174
22	+138 +1 4 +110	+ 96 + 8 + 69	+ 55 + 41 + 7	+14 0 -14	-27 - 41 - 55	-69 - 82 - 96	-110 -1 4 -138
24	+101 + 90 + 8	+ 70 + 6 + 50	+ 40 + 30 + 20	+10 0 -10	- 30 - 40	-50 - 60 - 70	- 80 - 90 -101
26	+ 63 + 56 + 50	+ 44 + 38 + 31	+ 25 + 19 + 13	+ 6 0 - 6	-13 -19 - 5	-31 - 38 - 44	- 50 - 56 - 63
28	+ 4 + 19	+ 17 + 14 + 1	+ 10 + 7 + 5	+ 2 0 - 2	- 5 - 7 -10	- 1 -14 -17	-19 -22 - 24
30	-16 -14 -13	-11 -10 - 8	- 6 - 5 - 3	- 2 0 + 2	+ 3 + 5 + 6	+ 8 + 10 + 11	+ 13 + 14 + 16
32	-57 -51 -46	-40 -34 - 9	-23 -17 -11	- 6 0 + 6	+ 11 + 17 + 23	+ 29 + 34 + 40	+ 46 + 51 + 57
34	-99 -90 -80	-70 -6 - 5	-40 -30 -20	-10 0 +10	+ 0 + 30 + 40	+ 50 + 60 + 70	+ 80 + 90 + 99
36	-143 -1 9 -115	-100 -86 - 7	-57 -43 - 9	-14 0 +14	+ 29 + 43 + 57	+ 72 + 86 +100	+115 +129 +143
38	-189 -170 -151	-13 -113 -94	-75 -57 -38	-19 0 +19	+ 38 + 57 + 75	+ 94 +113 +132	+151 +170 +189
40	-36 -21 -188	-165 -141 -118	-94 -71 -47	-24 0 +24	+ 47 + 71 + 94	+118 +141 +165	+188 +212 + 36
42	-85 -256 -228	-199 -171 -14	-114 -85 -57	- 8 0 +28	+ 57 + 85 +114	+142 +171 +199	+228 +256 +285
44	-335 -30 -268	-35 -01 -168	-134 -101 -67	-34 0 +34	+ 67 +101 +134	+168 +2 1 +235	+268 +30 +335
46	-388 -350 -311	-7 -33 -194	-155 -117 -78	-39 0 +39	+ 78 +117 +155	+194 +233 + 72	+311 +350 +388
154	+388 +35 +311	+ 72 +233 +194	+155 +117 + 78	+39 0 -39	-78 -117 -155	-194 - 33 -272	-311 -350 -388
156	+335 +3 +268	+ 35 +201 +168	+134 +101 + 67	+34 0 -34	-67 -101 -134	-168 -201 -235	- 68 -302 -335
158	+ 85 +256 + 8	+199 +171 +14	+114 + 85 + 57	+28 0 -28	-57 - 85 -114	-142 -171 -199	-228 -256 -285
160	+ 36 + 1 +188	+165 +141 +118	+ 94 + 71 + 47	+ 4 0 - 4	-47 - 71 - 94	-118 -141 -165	-188 -212 -236
162	+189 +170 +151	+13 +113 + 94	+ 75 + 57 + 38	+19 0 -19	-38 -57 -75	-94 -113 -132	-151 -170 -189
164	+143 +1 9 +115	+10 + 86 + 7	+ 57 + 43 + 9	+14 0 -14	- 9 -43 -57	-72 -86 -10	-115 -129 -143
166	+ 99 + 90 + 80	+ 7 + 60 + 50	+ 40 + 3 + 0	+10 0 -10	-20 -30 -40	-50 -60 -70	- 80 -90 -99
168	+ 57 + 51 + 46	+ 4 + 34 + 9	+ 3 + 17 + 11	+ 6 0 - 6	-11 -17 -23	-29 -34 -40	-46 -51 -57
170	+ 16 + 14 + 13	+ 11 + 10 + 8	+ 6 + 5 + 3	+ 0 - 2	- 3 - 5 - 6	- 8 -10 -11	-13 -14 -16
172	- 4 - 2 -19	-17 -14 -1	-10 -7 -5	- 0 + 2	+ 5 + 7 +10	+ 1 + 14 + 17	+ 19 + 2 + 24
174	-63 -56 -50	-44 -38 -31	- 5 -19 -13	- 6 0 + 6	+ 13 + 19 + 25	+ 31 + 38 + 44	+ 50 + 56 + 63
176	-101 -90 -80	-70 -6 -50	-40 -30 -20	-10 0 +10	+ 0 + 30 + 4	+ 5 + 60 + 70	+ 80 + 90 +101
178	-138 -124 -110	-96 -8 -69	-55 -41 -7	-14 0 +14	+ 27 + 41 + 55	+ 69 + 82 + 96	+110 +124 +138
180	-174 -156 -139	-12 -104 -87	-69 -52 -35	-17 0 +17	+ 35 + 5 + 69	+ 87 +104 +1	+139 +156 +174
182	- 09 -188 -167	-146 -125 -1 4	-84 -63 -4	- 1 0 + 1	+ 4 + 63 + 84	+1 4 +125 +146	+167 +188 + 09
184	-43 - 9 -195	-17 -146 -1	-97 -73 -49	- 4 0 + 4	+ 49 + 73 + 97	+1 2 +146 +170	+195 + 19 +243
186	-277 -50 -	-194 -166 -139	-111 -83 -55	- 8 0 +28	+ 55 + 83 +111	+139 +166 +194	+ 22 +25 + 77
188	-311 -80 -248	-17 -186 -155	-1 4 -93 -6	-31 0 +31	+ 6 + 93 +124	+155 +186 + 17	+248 + 80 +311
190	-343 -309 -275	- 4 -206 -17	-137 -1 3 -69	-34 0 +34	+ 69 +103 +137	+172 +206 +240	+ 75 +309 +343
192	-375 -338 -3 0	-63 - 5 -188	-15 -113 -75	-38 0 +38	+ 75 +113 +150	+188 +2 5 +263	+300 +338 +375
194	-407 -366 -326	-85 -44 -04	-163 -12 -81	-41 0 +41	+ 81 +1 2 +163	+ 04 + 44 +285	+326 +366 +407
196	-438 -394 -351	-3 7 -63 -19	-175 -131 -88	-44 0 +44	+ 88 +131 +175	+219 + 63 +307	+351 +394 +438
198	-469 -4 -375	-328 -281 -234	-188 -141 -94	-47 0 +47	+ 94 +141 +188	+234 +281 +328	+375 +422 +469
200	-499 -449 -399	-349 -299 -250	- 0 -150 -100	-50 0 +50	+1 0 +150 +200	+ 50 +299 +349	+399 +449 +499

This Table contains the correction of high latitudes for the variation of the phenomena. The correction is given in minutes of time for each hour of the day. The correction is to be added to the time of the phenomenon as given in the preceding tables. The correction is to be added to the time of the phenomenon as given in the preceding tables. The correction is to be added to the time of the phenomenon as given in the preceding tables.

# SATELLITE III

## Tables of the Phenomena

**XLIXa**

**Semiduration**

1	2	3	4	5	6
Lat.	Ecl., Oc.	$\Delta$ '001	$\frac{1}{2}\Delta^2$	Corr. Sh., Tr.	Lat.
'000	d ...	...	...	...	2'000
'002	0'004721	1705	353	- 13	1'998
'004	6718	880	59	19	1'996
'006	8241	703	29	23	1'994
'008	9530	605	20	26	1'992
'010	10659	537	14	30	1'990
'012	0'011678	490	10	- 33	1'988
'014	12617	452	8	35	1'986
'016	13488	422	7	38	1'984
'018	14303	397	5	40	1'982
'020	15075	377	5	42	1'980
'022	0'015810	359	4	- 44	1'978
'024	16509	342	4	46	1'976
'026	17178	328	3	47	1'974
'028	17820	315	3	49	1'972
'030	18439	304	3	51	1'970
'032	0'019037	295	2	- 53	1'968
'034	19617	285	2	54	1'966
'036	20178	277	2	56	1'964
'038	20723	269	2	57	1'962
'040	21253	262	2	59	1'960
'042	0'021769	255	2	- 60	1'958
'044	22272	249	1	62	1'956
'046	22764	243	1	63	1'954
'048	23244	237	1	64	1'952
'050	23713	232	1	66	1'950
'052	0'024172	227	1	- 67	1'948
'054	24621	223	1	68	1'946
'056	25062	218	1	70	1'944
'058	25494	214	1	71	1'942
'060	25918	210	1	72	1'940
'062	0'026335	207	1	- 73	1'938
'064	26744	203	1	74	1'936
'066	27147	200	1	75	1'934
'068	27542	196	1	76	1'932
'070	27931	193	1	77	1'930
'072	0'028313	190	1	- 78	1'928
'074	28690	187	1	79	1'926
'076	29062	185	1	80	1'924
'078	29428	182	1	81	1'922
'080	29788	179	1	82	1'920
'082	0'030144	177	1	- 83	1'918
'084	30494	174	1	84	1'916
'086	30840	172	1	85	1'914
'088	31181	170	1	86	1'912
'090	31518	168	1	87	1'910
'092	0'031851	166	1	- 88	1'908
'094	32180	163	1	89	1'906
'096	32504	161	1	90	1'904
'098	32824	159	0	91	1'902
'100	0'033142	158	0	- 92	1'900

1	2	3	4	5
Lat.	Ecl., Oc.	$\Delta$ '001	Corr. Sh., Tr.	Lat.
'100	d 0'033142	158	- 92	1'900
'102	33455	156	93	1'898
'104	33764	154	94	1'896
'106	34070	152	94	1'894
'108	34373	151	95	1'892
'110	34672	149	96	1'890
'112	0'034968	147	- 97	1'888
'114	35261	146	98	1'886
'116	35551	144	99	1'884
'118	35838	143	99	1'882
'120	36122	141	100	1'880
'122	0'036403	140	- 101	1'878
'124	36682	139	102	1'876
'126	36958	137	102	1'874
'128	37231	136	103	1'872
'130	37501	135	104	1'870
'132	0'037769	133	- 105	1'868
'134	38034	132	105	1'866
'136	38297	131	106	1'864
'138	38558	130	107	1'862
'140	38816	129	107	1'860
'142	0'039072	128	- 108	1'858
'144	39326	126	109	1'856
'146	39577	125	110	1'854
'148	39826	124	110	1'852
'150	40074	123	111	1'850
'152	0'040319	122	- 112	1'848
'154	40562	121	112	1'846
'156	40803	120	113	1'844
'158	41042	119	113	1'842
'160	41279	118	114	1'840
'162	0'041514	117	- 115	1'838
'164	41747	116	115	1'836
'166	41979	115	116	1'834
'168	42208	114	117	1'832
'170	42436	113	117	1'830
'172	0'042661	112	- 118	1'828
'174	42885	112	119	1'826
'176	43108	111	119	1'824
'178	43330	111	120	1'822
'180	43550	110	121	1'820
'182	0'043768	109	- 121	1'818
'184	43984	108	122	1'816
'186	44198	107	122	1'814
'188	44410	106	123	1'812
'190	44622	106	123	1'810
'192	0'044833	105	- 124	1'808
'194	45041	104	124	1'806
'196	45247	103	125	1'804
'198	45452	102	126	1'802
'200	0'045656	101	- 126	1'800

1	2	3	4	5
Lat.	Ecl., Oc.	$\Delta$ '001	Corr. Sh., Tr.	Lat.
'200	d 0'045656	101,3	- 126	1'800
'205	46161	100,0	128	1'795
'210	46656	98,2	129	1'790
'215	47143	96,7	130	1'785
'220	47623	95,2	132	1'780
'225	48095	93,6	133	1'775
'230	0'048559	92,0	- 134	1'770
'235	49015	90,6	136	1'765
'240	49465	89,2	137	1'760
'245	49907	87,8	138	1'755
'250	50343	86,5	139	1'750
'255	0'050772	85,1	- 140	1'745
'260	51194	83,9	142	1'740
'265	51611	82,7	143	1'735
'270	52021	81,3	144	1'730
'275	52425	80,3	145	1'725
'280	0'052824	79,1	- 146	1'720
'285	53216	77,9	147	1'715
'290	53603	76,9	148	1'710
'295	53985	75,9	149	1'705
'300	54362	74,8	150	1'700
'305	0'054733	73,7	- 151	1'695
'310	55099	72,7	152	1'690
'315	55460	71,7	153	1'685
'320	55816	70,7	154	1'680
'325	56167	69,8	155	1'675
'330	0'056514	68,8	- 156	1'670
'335	56855	67,8	157	1'665
'340	57192	67,0	158	1'660
'345	57525	66,2	159	1'655
'350	57854	65,3	160	1'650
'355	0'058178	64,4	- 161	1'645
'360	58498	63,5	162	1'640
'365	58813	62,7	163	1'635
'370	59125	61,9	163	1'630
'375	59432	61,1	164	1'625
'380	0'059736	60,3	- 165	1'620
'385	60035	59,4	166	1'615
'390	60330	58,6	167	1'610
'395	60621	57,9	168	1'605
'400	60909	57,2	168	1'600
'405	0'061193	56,5	- 169	1'595
'410	61474	55,8	170	1'590
'415	61751	55,0	171	1'585
'420	62024	54,3	171	1'580
'425	62294	53,6	172	1'575
'430	0'062560	52,9	- 173	1'570
'435	62823	52,2	174	1'565
'440	63082	51,5	174	1'560
'445	63338	50,9	175	1'555
'450	0'063591	50,2	- 176	1'550

Applied Constant:  $-0^d.000100$ .

entry of Table XLVIII.

Col. 4 or 5, and that for Phase from Table LXV must also be applied.

The Argument of Table XLIXa is the Latitude as derived from Tables XXXVII-XLIV, corrected by the

The entry must be corrected further by the entries of Tables LI-LV.

For Shadows and Transits, the correction from

# SATELLITE III

## Tables of the Phenomena

XLIXb

Semiduration—continued

L t	Ecl Oc	3 Δ o	4 Co Sh T	5 Lat
450	<sup>d</sup> 063191	50	-176	1 550
455	63441	49 6	176	1 545
460	63687	48 9	177	1 540
465	63930	48 3	178	1 535
470	6417	47 7	179	1 530
475	64407	47 1	179	1 525
480	064641	46 4	-180	1 520
485	64871	45 7	181	1 515
490	65 98	45	181	1 510
495	653 3	44 7	18	1 505
500	65545	44 0	18	1 500
505	065763	43 4	-183	1 495
510	65979	4 9	184	1 490
515	6619	4 3	184	1 485
520	66402	41 7	185	1 480
525	666 9	41 1	185	1 475
530	0 66813	40 6	-186	1 470
535	67 15	40 1	186	1 465
540	67 14	39 5	187	1 460
545	6741	39	187	1 455
550	676 4	38 5	188	1 450
555	067795	37 9	-189	1 445
560	67983	37 3	189	1 440
565	68168	36 8	190	1 435
570	68351	36 3	19	1 430
575	68531	35 8	19	1 425
580	0687 9	35 3	-191	1 420
585	68884	34 8	19	1 415
590	69 57	34 3	19	1 410
595	69 7	33 8	19	1 405
600	69395	33 3	193	1 400
605	069560	3 8	-193	1 395
610	69723	3 3	194	1 390
615	69883	31 8	194	1 385
620	70041	31 4	195	1 380
625	70197	30 8	195	1 375
630	070349	30 3	-195	1 370
635	70500	9 9	196	1 365
640	70648	9 4	196	1 360
645	70794	28 9	197	1 355
650	70937	8 5	197	1 350
655	071079	28 2	-198	1 345
660	71 19	7 6	198	1 340
665	71355	7	198	1 335
670	7149	26 7	199	1 330
675	716	26 2	199	1 325
680	07175	5 8	-200	1 320
685	71880	5 3	200	1 315
690	7 0 5	4 8	200	1 310
695	721 8	24 4	200	1 305
700	07 249	4 0	- 01	1 300

Lat	Ecl Oc	3 Δ oor	4 Cor Sh Tr	5 Lat
700	07 249	24	- 1	1 300
705	7 368	3 6	01	1 295
710	7 485	3 1	01	1 290
715	7 599	2 6	0	1 285
720	7 711		20	1 280
725	728 1	1 8	2	1 275
730	072929	1 4	- 03	1 270
735	73 35	21	03	1 265
740	73139	0 5	03	1 260
745	7324	1	203	1 255
750	73340	19 7	04	1 250
755	073437	19 3	-204	1 245
760	73533	18 9	04	1 240
765	736 6	18 4	05	1 235
770	73717	18 0	205	1 230
775	73806	17 6	205	1 225
780	073893	17	-206	1 220
785	73978	16 8	06	1 215
790	74061	16 4	06	1 210
795	7414	16	06	1 205
800	74 1	15 5	06	1 200
805	074297	15 1	- 06	1 195
810	7437	14 8	07	1 190
815	74445	14 4	07	1 185
820	74516	14 0	7	1 180
825	74585	13 6	07	1 175
830	07465	13 1	- 08	1 170
835	74716	12 7	08	1 165
840	74779	1 4	08	1 160
845	7484	1 0	208	1 155
850	74899	11 6	8	1 150
855	074956	11 2	- 09	1 145
860	75011	10 7	2 9	1 140
865	75063	1 3	09	1 135
870	75114	10 0	209	1 130
875	75163	9 6	9	1 125
880	0 75210	9 3	- 09	1 120
885	75256	8 9	209	1 115
890	75 99	8 4	209	1 110
895	75340	8 1	209	1 105
900	7538	7 7	09	1 100
905	075417	7	-209	1 095
910	7545	6 9	10	1 090
915	75486	6 5	21	1 085
920	75517	6 1	210	1 080
925	75547	5 7	21	1 075
930	075574	5 3	- 10	1 070
935	75600	5 0	21	1 065
940	756 4	4 6	210	1 060
945	75646	4	210	1 055
950	075666	3 9	- 10	1 050

Lat	Ecl Oc	3 Δ oo	4 Cor Sh Tr	5 Lat
950	075666	3 9	-210	1 050
955	75685	3 5	210	1 045
960	757 1	3 0	210	1 040
965	75715	6	210	1 035
970	757 7	3	1	1 030
975	75738	1 9	1	1 025
980	075746	1 5	-210	1 020
985	75753	1	211	1 015
990	75758	0 8	211	1 010
995	75761	0 4	211	1 005
1 000	075762	0	-211	1 000

Add l C t t oo oo ll Ag t f  
 tl l l l i tl L t t d l i d f l l l  
 XXXVII XLIV  
 ll t y t b t d ly tl t l f  
 T ll L IV I Sl dw d l it tl rr  
 tl f m l m t t b ppl d l l th t  
 f J pit pl f m T bl LXV



# SATELLITE III

## Tables of the Phenomena

### Equation of Semiduration

L

Var. Lat.	-010 -009 -008			-007 -006 -005			-004 -003 -002			-001 000 +001			+002 +003 +004			+005 +006 +007			+008 +009 +010			Var. Lat.
44	228	245	262	280	297	314	331	348	366	383	400	417	434	452	469	486	503	520	538	555	572	1.56
46	211	230	249	268	287	305	324	343	362	381	400	419	438	457	476	495	513	532	551	570	589	1.54
48	195	215	236	256	277	297	318	338	359	379	400	421	441	462	482	503	523	544	564	585	605	1.52
50	179	202	224	246	268	290	312	334	356	378	400	422	444	466	488	510	532	554	576	598	621	1.50
52	165	189	212	235	259	283	306	329	353	377	400	423	447	471	494	517	541	565	588	611	635	1.48
54	151	177	201	226	251	276	301	325	350	375	400	425	450	475	499	524	549	574	599	623	649	1.46
56	139	165	191	217	243	270	296	322	347	374	400	426	453	478	504	530	557	583	609	635	661	1.44
58	127	155	182	209	236	264	291	318	345	373	400	427	455	482	509	536	564	591	618	645	673	1.42
60	116	145	173	201	230	258	287	315	343	372	400	428	457	485	513	542	570	599	627	655	684	1.40
62	106	136	165	194	223	253	282	312	341	371	400	429	459	488	518	547	577	606	635	664	694	1.38
64	96	127	157	187	218	249	279	309	339	370	400	430	461	491	521	551	582	613	643	673	704	1.36
66	87	119	150	181	212	244	275	306	337	369	400	431	463	494	525	556	588	619	650	681	713	1.34
68	79	111	143	175	207	240	272	304	335	368	400	432	465	496	528	560	593	625	657	689	721	1.32
70	71	104	137	170	202	236	269	301	334	367	400	433	466	499	531	564	598	630	663	696	729	1.30
72	64	98	131	165	198	232	266	299	332	367	400	433	468	501	534	568	602	635	669	702	736	1.28
74	57	92	126	160	194	229	263	297	331	366	400	434	469	503	537	571	606	640	674	708	743	1.26
76	51	87	121	156	190	226	261	295	330	365	400	435	470	505	539	574	610	644	679	713	749	1.24
78	45	81	117	152	187	223	258	294	329	365	400	435	471	506	542	577	613	648	683	719	755	1.22
80	40	77	113	148	184	221	256	292	328	364	400	436	472	508	544	579	616	652	687	723	760	1.20
82	36	73	109	145	181	218	254	291	327	364	400	436	473	509	546	582	619	655	691	727	764	1.18
84	32	70	106	143	179	217	253	290	326	364	400	436	474	510	547	583	621	657	694	730	768	1.16
86	28	66	103	140	177	215	252	288	325	363	400	437	475	512	548	585	623	660	697	734	772	1.14
88	25	64	101	138	175	213	250	288	325	363	400	437	475	512	550	587	625	662	699	736	775	1.12
90	23	61	99	136	173	212	249	287	324	363	400	437	476	513	551	588	627	664	701	739	777	1.10
92	21	59	97	135	172	211	249	286	324	362	400	438	476	514	551	589	628	665	703	741	779	1.08
94	19	58	96	133	171	210	248	286	323	362	400	438	477	514	552	590	629	667	704	742	781	1.06
96	18	57	95	133	170	209	247	285	323	362	400	438	477	515	553	591	630	667	705	743	782	1.04
98	17	56	94	132	170	209	247	285	323	362	400	438	477	515	553	591	630	668	706	744	783	1.02
1.00	17	56	94	132	170	209	247	285	323	362	400	438	477	515	553	591	630	668	706	744	783	1.00

Applied Constant: +400. The unit in this Table equals 0.000001.

This Table is complementary to Table XLVIII. It shows a correction to be applied to the Semiduration as derived from Table XLIX<sup>b</sup>, due to the Variation, when the Latitude as found from Tables XXXVII-XLIV lies between 45 and 1.55.

# SATELLITE III

## Tables of the Phenomena

### Equations of Semiduration

LI				LII											
Ecl Oc				Ecl, Oc, Sh, Tr											
	Ecl Oc	$\alpha$	Ecl Oc	Lat $\beta$	20	19	18	17	16	15	14	13	12	11	10
					00	01	02	03	04	05	06	07	08	09	
0	+ 000017	2400	- 000016	d	10	10	10	10	10	10	10	10	10	10	10
200	16	2600	14	20	10	11	11	11	12	1	1	12	1	1	1
400	14	2800	10	40	10	1	1	13	13	13	14	14	14	14	14
600	11	3000	6	60	10	13	14	14	15	15	16	16	16	16	16
800	7	3200	- 1	80	1	13	14	15	16	16	16	17	17	17	17
1000	+	3400	+	100	10	13	14	15	16	16	16	17	17	17	17
1200	- 0 0003	3600	+ 0 0008	120	10	13	14	15	16	16	16	17	17	17	17
1400	8	3800	1	140	1	13	14	14	15	15	16	16	16	16	16
1600	12	4000	15	160	1	1	12	13	13	13	14	14	14	14	14
1800	15	4200	17	180	10	11	11	11	1	12	12	12	12	12	1
2000	17	4400	17	200	10	10	10	10	10	10	10	10	10	10	10
2200	- 000017	4600	+ 000016	220	10	9	9	9	8	8	8	8	8	8	8
2400	16	4800	13	240	10	8	8	7	7	7	6	6	6	6	6
2600	000014	5000	+ 00001	260	10	7	6	6	5	5	4	4	4	4	4
				280	10	7	6	5	4	4	4	3	3	3	3
				300	10	7	6	5	4	4	4	3	3	3	3
				320	10	7	6	5	4	4	4	3	3	3	3
				340	10	7	6	6	5	5	4	4	4	4	4
				360	10	8	8	7	7	7	6	6	6	6	6
				380	10	9	9	9	8	8	8	8	8	8	8
				400	10	10	10	10	10	10	10	10	10	10	10

N C t t l b l l d

Appli d C t t + 000

El it l l 00 00

### LIII

### Oc, Tr

Lat $\beta$	1 98	1 96	1 94	1 92	1 90	1 88	1 86	1 84	1 82	1 8	1 7	1 6	1 5	1 4	1 3	1 2	1 1	1 0
	02	04	06	08	10	12	14	16	18	2	3	4	5	6	7	8	9	
d																		
0	± 101	± 71	± 59	± 51	± 46	± 4	± 39	± 37	± 35	± 33	± 28	± 25	± 23	± 2	± 21	± 20	± 20	± 0
20	96	68	56	48	44	40	37	35	33	32	27	4	22	1	20	19	19	19
40	8	57	47	41	37	34	31	9	28	7	22	20	18	17	17	16	16	16
60	60	43	35	31	7	5	4	2	21	0	17	15	14	13	13	12	1	12
80	± 3	±	± 18	± 15	± 14	± 13	± 1	± 11	± 1	± 10	± 8	± 8	± 7	± 7	± 6	± 6	± 6	± 6
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	± 30	± 21	± 18	± 15	± 14	± 13	± 1	± 11	± 10	± 10	± 8	± 8	± 7	± 7	± 6	± 6	± 6	± 6
140	60	43	35	31	7	25	4		1	20	17	15	14	13	13	12	12	1
160	80	57	47	41	37	34	31	9	8	7	2	20	18	17	17	16	16	16
180	96	68	56	48	44	40	37	35	33	3	7	24	2	1	20	19	19	19
200	101	71	59	51	46	42	39	37	35	33	8	5	23	22	21	0	20	20
220	± 96	± 68	± 56	± 48	± 44	± 40	± 37	± 35	± 33	± 3	± 7	± 24	± 22	± 21	± 20	± 19	± 19	± 19
240	80	57	47	41	37	34	31	9	28	7	22	20	18	17	17	16	16	16
260	6	43	35	31	7	25	24	22	21	0	17	15	14	13	13	12	12	12
280	± 30	± 21	± 18	± 15	± 14	± 13	± 12	± 11	± 10	± 10	± 8	± 8	± 7	± 7	± 6	± 6	± 6	± 6
300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
320	± 30	± 21	± 18	± 15	± 14	± 13	± 12	± 11	± 10	± 10	± 8	± 8	± 7	± 7	± 6	± 6	± 6	± 6
340	60	43	35	31	7	25	24	2	1	2	17	15	14	13	13	12	12	12
360	80	57	47	41	37	34	31	9	28	27	2	0	18	17	17	16	16	16
380	96	68	56	48	44	40	37	35	33	32	27	24	22	21	0	19	19	19
400	± 101	± 71	± 59	± 51	± 46	± 4	± 39	± 37	± 35	± 33	± 28	± 25	± 23	± 22	± 21	± 20	± 20	± 20

Th pp gn ppl t O lt t th l w t T t N C th b dd d Th itl thi T bl q l 00000

# SATELLITE III

## Tables of the Phenomena

LIV

Equation of Semiduration

Ecl., Oc.

$\begin{array}{c} S \\ O \end{array}$	$0^d.0$	$0^d.4$	$0^d.8$	$1^d.2$	$1^d.6$	$2^d.0$	$2^d.4$	$2^d.8$	$3^d.2$	$3^d.6$	$4^d.0$	$4^d.4$	$4^d.8$	$5^d.2$	$5^d.6$	$6^d.0$	$6^d.4$	$6^d.8$	$7^d.2$	$7^d.6$	$8^d.0$
$0^d.0$	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
$0^d.2$	92	93	93	93	94	93	93	92	92	91	91	91	90	90	90	91	91	92	93	93	93
$0^d.4$	98	99	100	100	100	100	99	98	97	96	95	94	94	94	94	95	96	97	98	99	99
$0^d.6$	107	109	110	110	110	109	108	106	104	102	101	100	100	100	101	102	104	105	107	109	110
$0^d.8$	116	118	120	121	120	119	117	114	111	109	106	105	105	105	106	108	111	114	116	118	110
$1^d.0$	123	126	128	129	129	127	124	120	116	113	110	109	108	109	111	114	117	120	124	127	129
$1^d.2$	126	129	132	134	133	131	128	124	119	115	112	110	109	110	112	115	118	122	126	130	133
$1^d.4$	125	129	133	135	135	133	129	125	119	115	112	110	109	109	111	114	117	121	126	130	133
$1^d.6$	120	125	130	134	135	134	130	126	120	115	110	107	106	105	106	108	112	116	121	126	131
$1^d.8$	118	123	129	133	136	135	133	128	123	118	113	110	107	106	106	108	110	114	118	124	129
$2^d.0$	115	120	126	131	134	135	133	130	125	120	116	112	109	107	107	107	109	112	116	121	126
$2^d.2$	116	120	125	130	134	135	135	133	130	125	121	117	114	111	110	109	110	113	116	121	126
$2^d.4$	114	117	122	126	129	131	131	130	127	124	120	116	113	111	109	109	109	111	114	118	122
$2^d.6$	111	114	118	121	124	126	127	126	124	121	118	115	112	109	108	107	107	109	111	114	118
$2^d.8$	108	111	114	117	119	120	120	120	118	115	112	110	107	105	104	104	104	106	108	111	114
$3^d.0$	102	104	106	108	109	110	110	109	108	106	105	103	101	100	99	99	100	101	102	104	106
$3^d.2$	95	96	98	99	99	100	100	99	99	97	96	95	94	93	93	93	94	94	95	97	98
$3^d.4$	92	92	93	93	93	93	93	93	92	92	91	91	90	90	90	90	91	91	92	92	93
$3^d.6$	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
$3^d.8$	92	91	91	90	90	90	91	91	91	93	93	94	94	94	94	94	93	92	92	91	90
$4^d.0$	97	96	95	95	94	95	95	96	98	99	100	101	101	101	101	100	99	98	97	96	95
$4^d.2$	103	102	101	100	100	101	102	104	106	108	110	111	112	112	111	109	107	105	103	102	100
$4^d.4$	108	106	105	105	105	107	109	111	114	117	119	121	121	121	119	117	114	111	108	106	105
$4^d.6$	113	110	109	108	109	111	113	117	120	124	127	129	130	129	127	124	120	116	113	110	109
$4^d.8$	115	112	110	109	109	111	114	117	121	125	129	132	134	133	131	127	123	119	114	111	109
$5^d.0$	115	111	109	108	108	110	113	116	120	125	129	133	135	136	133	129	124	119	114	111	109
$5^d.2$	117	113	110	108	108	109	111	114	118	123	128	133	136	138	136	132	127	122	117	113	110
$5^d.4$	119	114	110	108	106	107	107	109	113	117	122	128	133	135	136	133	129	124	118	114	110
$5^d.6$	122	118	113	110	108	107	107	109	111	115	120	126	130	134	135	134	131	127	122	117	113
$5^d.8$	124	120	115	112	109	108	108	109	111	115	119	124	129	133	134	134	132	128	124	119	115
$6^d.0$	125	121	117	114	111	109	108	109	111	114	118	122	126	130	131	132	131	128	125	121	117
$6^d.2$	120	117	114	111	109	107	107	107	109	112	115	118	122	124	126	126	125	123	120	117	114
$6^d.4$	113	110	108	105	104	103	102	103	104	106	108	111	114	116	117	117	116	115	113	110	107
$6^d.6$	104	102	101	99	98	97	97	97	98	100	102	103	105	106	107	107	107	105	104	102	100
$6^d.8$	97	96	94	93	93	93	93	93	94	95	96	97	98	99	99	99	98	98	97	95	94
$7^d.0$	91	91	90	90	90	90	90	90	91	91	92	92	93	93	93	93	92	92	91	91	90
$7^d.2$	90	90	91	91	91	91	91	91	90	90	90	90	90	90	90	90	90	90	90	90	91
$7^d.4$	93	94	95	95	95	95	94	94	93	92	92	92	91	91	91	92	92	93	94	94	95
$7^d.6$	100	101	102	103	103	102	101	100	98	96	95	95	94	94	95	96	97	99	100	101	102
$7^d.8$	109	111	113	113	113	112	110	108	106	104	102	100	100	100	101	103	105	107	109	111	113
$8^d.0$	117	119	121	122	121	120	117	114	111	108	106	105	105	105	107	109	112	115	117	120	121

Applied Constant: + 90. The unit in this Table equals 0<sup>d</sup>.000000.

# SATELLITE III

## Tables of the Phenomena

LV	Equation of Semiduration												Sh, Tr									
<div>S O</div>	0 <sup>d</sup> 0 0 <sup>d</sup> 4 0 <sup>d</sup> 8			1 <sup>d</sup> 2 1 <sup>d</sup> 6 2 <sup>d</sup> 0			2 <sup>d</sup> 4 2 <sup>d</sup> 8 3 <sup>d</sup> 2			3 <sup>d</sup> 6 4 <sup>d</sup> 0 4 <sup>d</sup> 4			4 <sup>d</sup> 8 5 <sup>d</sup> 2 5 <sup>d</sup> 6			6 <sup>d</sup> 0 6 <sup>d</sup> 4 6 <sup>d</sup> 8			7 <sup>d</sup> 2 7 <sup>d</sup> 6 8 <sup>d</sup> 0			
00	2		3	24	25	7	8	29	30	30	3	29	8	27	25	24	23	22	22	22		3
02	7	28	9	30	3	33	34	34	35	34	33	32	30	29	27	27	26	7	28	28		29
04	41	4	44	45	47	48	48	47	47	46	44	4	41	40	38	38	39	39	41	42		43
06	61	63	65	66	67	68	67	66	64	6	60	58	57	56	56	56	57	59	61	63		65
08	8	85	88	90	90	90	88	86	83	80	77	75	74	73	73	74	77	80	82	85		88
10	101	1	107	109	110	109	106	102	98	95	91	9	88	88	89	92	95	98	102	106		109
12	114	117	1	124	1	122	119	115	110	106	10	1	98	99	10	103	106	110	114	119		12
14	1	124	128	131	131	1	126	122	116	111	108	106	105	104	106	109	112	116	121	1		128
16	119	1	1	133	134	133	129	1	119	114	109	106	105	104	105	107	111	115	120	125		130
18	118	1	1	133	136	135	133	1	1	118	113	110	107	106	106	108	110	114	118	1		129
20	1	119	1	130	133	134	13	1	1	118	114	110	107	106	106	106	108	111	115	120		125
22	11	116	1	126	130	130	130	1	124	119	115	111	108	105	105	104	105	109	11	117		122
24	1	107	112	116	119	1	120	118	114	111	107	103	100	98	97	97	98	100	104	108		11
26	92	95	99	1	2	105	106	104	102	98	95	9	89	86	86	86	87	90	92	95		99
28	78	81	84	87	88	88	87	86	83	80	76	75	7	71	71	72	73	75	78	81		84
30	61	63	65	66	66	66	65	63	61	59	57	55	54	54	54	55	57	59	61	63		65
32	44	45	46	47	46	45	44	4	41	38	37	37	37	37	38	39	41	42	44	46		46
34	34	34	34	34	3	31	30	8	6	26	5	26	26	27	28	30	31	32	34	34		34
36	30	3	9	8	7	5	4	23		2		23	24	25	7	28	29	30	30	30		9
38	35	34	33	31	9	8	8	7	6	8	9	31	32	33	35	36	36	35	35	34		3
40	48	46	44	43	41	41	40	40	42	43	45	46	48	49	50	50	50	49	48	46		44
42	64	63	61	59	57	57	57	59	61	63	66	68	70	71	71	70	68	66	64	62		59
44	81	78	76	75	74	75	77	78	81	85	87	90	91	92	91	90	87	84	81	78		76
46	96	93	91	9	9	91	9	96	99	104	107	110	112	111	110	107	104	100	96	93		91
48	1	1	101	99	99	10	1	1	110	114	118	1	125	1	12	119	115	111	106	102		10
50	11	1	106	104	104	1	108	111	115	120	125	1	131	133	130	126	121	116	111	108		106
52	117	113	11	107	107	1	110	113	117	122	1	132	135	137	135	132	127	122	117	113		109
54	119	114	110	108	106	107	107	109	113	117	1	1	133	135	136	133	129	1	118	114		110
56	12	116	111	108	106	105	106	108	110	114	119	1	1	133	134	132	129	125	120	115		111
58	118	113	108	1	103	1	103	104	106	110	115	120	125	128	1	129	126	122	118	112		108
60	111	107	103	10	97	96	95	97	100	103	107	111	115	118	119	120	118	114	111	107		103
62	96	9	89	86	85	84	85	86	88	9	95	98	101	103	105	104	102	99	95	92		89
64	76	73	71	69	68	68	68	7	7	75	77	80	83	84	84	83	81	79	76	73		7
66	55	53	5	50	50	51	5	53	55	57	60	6	62	62	62	60	59	56	55	53		51
68	37	36	35	34	36	37	38	39	41	43	44	44	45	44	43	42	40	39	37	36		35
70	5	5	24	5	7	28	29	30	3	33	33	33	33	3	30	29	27	26	25	25		24
72	2	23	4	25	7	8	29	30	30	30	30	29	28	7	25	4	3	2	2	22		4
74	9	30	3	34	35	36	36	37	37	36	35	34	3	31	30	29	9	29	30	31		33
76	45	46	48	51	52	5	5	5	50	48	46	45	43	42	4	41	42	44	45	46		48
78	65	68	71	7	73	73	7	71	69	66	64	6	6	59	58	60	61	63	65	68		71
80	86	89	92	94	93	93	91	88	85	82	79	77	76	75	77	78	81	84	86	90		92

Appli d C t t +9 Th it i this T bl i q l t ooooo

# SATELLITE III

## Tables of the Phenomena

LVI

Reduction to Middle

Argument O

1	2	3	4	5
Ecl., Oc.	$\Delta$ 0 <sup>d</sup> .01	O	Sh., Tr.	$\Delta$ 0 <sup>d</sup> .01
d - 0'000360	- 27,5	0'00	d - 0'000440	- 36,0
470	27,5	04	584	35,9
580	27,3	08	727	35,6
688	26,8	12	869	35,3
794	26,3	16	1009	34,6
898	25,8	20	1146	33,8
- 0'001000	- 25,1	0'24	- 0'001279	- 32,8
1099	24,4	28	1408	31,6
1195	23,4	32	1532	30,4
1286	21,8	36	1651	29,1
1373	21,0	40	1765	27,5
- 0'001454	- 19,6	0'44	- 0'001871	- 25,6
1530	18,3	48	1970	23,9
1600	16,8	52	2062	22,0
1664	15,3	56	2146	19,9
1722	13,6	60	2221	17,8
- 0'001773	- 11,9	0'64	- 0'002288	- 15,6
1817	10,1	68	2346	13,3
1854	8,4	72	2394	10,9
1884	6,5	76	2433	8,5
1906	4,5	80	2462	6,0
- 0'001920	- 2,6	0'84	- 0'002481	- 3,4
1927	- 0,6	88	2489	- 0,9
1925	+ 1,4	92	2488	+ 1,6
1916	3,1	96	2476	4,1
1900	5,0	1'00	2455	6,6
- 0'001876	+ 7,0	1'04	- 0'002423	+ 9,1
1844	8,9	08	2382	11,5
1805	10,6	12	2331	13,9
1759	12,3	16	2271	16,1
1707	14,0	20	2202	18,4
- 0'001647	+ 15,8	1'24	- 0'002124	+ 20,6
1581	17,3	28	2037	22,6
1509	18,8	32	1943	24,4
1431	20,1	36	1842	26,3
1348	21,3	40	1733	28,0
- 0'001261	+ 22,4	1'44	- 0'001618	+ 29,4
1169	23,6	48	1498	30,8
1072	24,6	52	1372	32,1
972	25,3	56	1241	33,1
870	25,9	60	1107	34,0
- 0'000765	+ 26,6	1'64	- 0'000969	+ 34,8
657	27,1	68	829	35,4
548	27,3	72	686	35,8
439	27,4	76	543	35,9
329	27,5	80	399	36,0
- 0'000219	+ 27,4	1'84	- 0'000255	+ 35,9
110	27,1	88	- 112	35,5
- 2	26,9	92	+ 29	35,0
+ 105	26,4	96	168	34,4
+ 0'000209	+ 25,6	2'00	+ 0'000304	+ 33,5

1	2	3	4	5
Ecl., Oc.	$\Delta$ 0 <sup>d</sup> .01	O	Sh., Tr.	$\Delta$ 0 <sup>d</sup> .01
d + 0'000209	+ 25,6	2'00	d + 0'000304	+ 33,5
310	24,8	04	436	32,5
407	23,9	08	564	31,4
501	23,0	12	687	30,0
591	21,9	16	804	28,6
676	20,6	20	916	27,0
+ 0'000756	+ 19,4	2'24	+ 0'001020	+ 25,3
831	17,9	28	1118	23,5
899	16,3	32	1208	21,4
961	14,8	36	1289	19,3
1017	13,3	40	1362	17,1
+ 0'001067	+ 11,5	2'44	+ 0'001426	+ 14,9
1109	9,5	48	1481	12,5
1143	7,6	52	1526	10,1
1170	5,9	56	1562	7,8
1190	4,1	60	1588	5,3
+ 0'001203	+ 2,1	2'64	+ 0'001604	+ 2,8
1207	+ 0,1	68	1610	+ 0,3
1204	- 1,8	72	1606	- 2,4
1193	3,8	76	1591	4,9
1174	5,6	80	1567	7,4
+ 0'001148	- 7,5	2'84	+ 0'001532	- 9,9
1114	9,4	88	1488	12,1
1073	11,1	92	1435	14,5
1025	12,8	96	1372	16,9
971	14,5	3'00	1300	19,0
+ 0'000909	- 16,3	3'04	+ 0'001220	- 21,1
841	17,8	08	1131	23,1
767	19,1	12	1035	25,0
688	20,4	16	931	26,8
604	21,6	20	821	28,4
+ 0'000515	- 22,8	3'24	+ 0'000704	- 29,9
422	23,9	28	582	31,1
324	24,9	32	455	32,4
223	25,5	36	323	33,4
120	26,1	40	188	34,1
+ 0'000014	- 26,8	3'44	+ 0'000050	- 34,9
- 94	27,1	48	- 91	35,5
203	27,3	52	234	35,9
312	27,4	56	378	36,0
422	27,4	60	522	35,9
- 0'000532	- 27,4	3'64	- 0'000665	- 35,8
641	27,1	68	808	35,4
749	26,6	72	948	34,9
854	26,0	76	1087	34,3
957	25,5	80	1222	33,3
- 0'001058	- 24,6	3'84	- 0'001353	- 32,1
1154	23,6	88	1479	31,0
1247	22,8	92	1601	29,8
1336	21,5	96	1717	28,1
- 0'001419	- 20,1	4'00	- 0'001826	- 26,4

Applied Constant : - 0<sup>d</sup>.000400.

corrected by the Equations of Tables LVII-LXIV.  
Tables XXXIII-XXXVI.

This Table includes a constant portion of the Equation of Light.

The whole must be corrected by adding to it its product by the Variation, as drawn from  
For Shadows and Transits it must also be corrected for Jupiter's Phase by Table LXV.

The Entry must be

# SATELLITE III

## Tables of the Phenomena

LVI continued

Reductions to Middle

Argument O

Ecl Oc	$\Delta$ o o	3 O	4 Sl T	5 $\Delta$ o or
d -0001419	-01	400	-0001826	-264
1497	189	04	198	46
1570	174	08	023	8
1636	159	12	110	08
1697	144	16	2189	188
1751	16	20	260	165
-001798	-109	424	-0031	-141
1838	91	28	2373	119
1871	73	32	2416	95
1896	54	36	449	71
1914	35	40	2473	4
-000194	-15	444	-0002486	-19
196	+5	48	2488	+6
19	24	52	481	3
197	43	56	464	55
1886	61	60	2437	80
-0001858	+80	464	-0002400	+105
182	99	68	2353	19
1779	116	72	2297	151
179	133	76	232	174
1673	149	80	158	196
-0001610	+166	484	-00075	+218
1540	181	88	1984	36
1465	195	92	1886	55
1384	08	96	1780	273
1299	19	500	1668	88
-000109	+31	504	-0001550	+303
1114	43	08	1426	315
1015	50	12	1298	326
914	256	16	1165	336
810	63	20	109	344
-0000704	+69	524	-0000890	+351
595	73	28	748	356
486	73	32	65	359
377	74	36	461	360
267	275	40	317	359
-0000157	+73	544	-0000174	+356
-49	270	48	-3	353
+59	266	52	+108	346
164	59	56	45	339
66	251	60	379	330
+0000365	+244	564	+000059	+319
461	35	68	634	305
553	3	72	753	91
639	10	76	867	78
721	0	80	975	261
+00799	+186	584	+0001076	+244
870	169	88	1170	23
934	154	92	1254	00
993	139	96	1330	180
+0001045	+11	600	+001398	+159

Ecl Oc	$\Delta$ o <sup>d</sup> or	3 O	4 Sh T	5 $\Delta$ o or
+0001045	+121	d 600	d +0001398	+159
109	104	04	1457	136
118	85	08	1507	113
1158	66	12	1547	88
1181	49	16	1577	63
1197	30	20	1597	38
+00125	+10	624	+0001607	+14
15	-10	28	1608	-13
1197	29	32	1597	39
1182	48	36	1577	63
1159	66	40	1547	88
+000119	-85	644	+0001507	-111
1091	104	48	1458	135
1046	121	52	1399	159
994	138	56	1331	181
936	155	60	1254	03
+0000870	-171	664	+0001169	-223
799	185	68	1076	241
722	199	72	976	259
640	211	76	869	276
553	23	80	755	93
+0000462	-34	684	+0000635	-306
366	244	88	510	319
67	53	92	380	330
164	60	96	246	339
+59	264	700	+109	345
-0000047	-269	704	-0000030	-351
156	73	08	172	358
65	273	12	316	360
374	275	16	460	359
485	275	20	603	358
-0000594	-271	724	-0000746	-356
70	269	28	888	351
809	264	32	1027	344
913	56	36	1163	336
1014	250	40	1296	328
-0001113	-241	744	-0001425	-315
1207	231	48	1548	303
1298	223	52	1667	289
1385	21	56	1779	274
1466	195	60	1886	58
-0001541	-180	764	-0001985	-238
1610	166	68	2076	216
1674	151	72	2158	196
1731	134	76	33	176
1781	116	80	2299	151
-0001824	-99	784	-0002354	-128
1860	81	88	2401	106
1889	63	92	2439	80
1910	43	96	2465	51
-000193	-3	800	-0002480	-24

Appl dC t t 004  
t db tl Eq t  
T bl XXXIII XXXVI

f T bl LVII LXIV

Th T bl i l des t t p r t l f t h Eq t f l i g h t  
Th wh l m t b t d b y d d i g t o l b i t p d t b y t h V i t i d r w f r m  
T Sh d w d T t i t m t l b t d f J p i t Ph b y T bl LXV

# SATELLITE III

## Tables of the Phenomena

### Equations of the Reduction

LVII

1	2
P	E., O., S., T.
d	d
0.0	0.000020
1	24
2	27
3	30
4	32
5	35
0.6	0.000037
7	38
8	39
9	39
1.0	39
1.1	0.000038
2	37
3	35
4	32
5	29
1.6	0.000026
7	23
8	19
9	16
2.0	13
2.1	0.000010
2	7
3	5
4	3
5	2
2.6	0.000001
7	1
8	1
9	2
3.0	3
3.1	0.000005
2	8
3	11
4	14
5	17
3.6	0.000021
7	24
8	27
9	30
4.0	0.000033

Constant: +0.000020.

LVIII

1	2	3	4	5
Ecl., Oc.	$\Delta$ od'OI	Q	Sh., Tr.	$\Delta$ od'OI
d	d	d	d	d
0.000290	-3,5	0.00	0.000290	-4,0
276	3,5	04	274	4,0
262	3,5	08	258	4,0
248	3,4	12	242	3,9
235	3,4	16	227	3,9
221	3,4	20	211	3,9
0.000208	-3,3	0.24	0.000196	-3,6
195	3,1	28	182	3,5
183	2,9	32	168	3,4
172	2,8	36	155	3,3
161	2,6	40	142	3,1
0.000151	-2,5	0.44	0.000130	-2,9
141	2,4	48	119	2,6
132	2,3	52	109	2,4
123	2,0	56	100	2,3
116	1,8	60	91	2,0
0.000109	-1,5	0.64	0.000084	-1,8
104	1,3	68	77	1,5
99	1,1	72	72	1,3
95	0,8	76	67	0,9
93	0,5	80	65	0,6
0.000091	-0,4	0.84	0.000062	-0,5
90	-0,1	88	61	0,0
90	+0,1	92	62	+0,3
91	0,4	96	63	0,5
93	0,6	1.00	66	0,8
0.000096	+0,9	1.04	0.000069	+1,0
100	1,1	08	74	1,4
105	1,4	12	80	1,5
111	1,6	16	86	1,8
118	1,8	20	94	2,0
0.000125	+2,0	1.24	0.000102	+2,3
134	2,3	28	112	2,6
143	2,4	32	123	2,8
153	2,6	36	134	2,9
164	2,8	40	146	3,0
0.000175	+2,8	1.44	0.000158	+3,2
186	3,0	48	172	3,4
199	3,2	52	185	3,5
212	3,3	56	200	3,8
225	3,3	60	215	3,9
0.000238	+3,4	1.64	0.000231	+3,9
252	3,5	68	246	4,0
266	3,5	72	263	4,0
280	3,5	76	278	3,9
294	3,5	80	294	4,1
0.000308	+3,5	1.84	0.000311	+4,0
322	3,4	88	326	3,9
335	3,4	92	342	4,0
349	3,4	96	358	3,9
0.000362	+3,3	2.00	0.000373	+3,6
375	3,2	04	375	3,6
388	3,0	08	388	3,5
399	2,9	12	399	3,3
411	2,9	16	411	3,1
422	2,5	20	422	3,0
0.000431	+2,4	2.24	0.000431	+2,9
441	2,4	28	441	2,6
450	2,1	32	450	2,4
458	1,9	36	458	2,1
465	1,8	40	465	1,9
0.000472	+1,5	2.44	0.000472	+1,6
477	1,1	48	477	1,4
481	1,0	52	481	1,3
485	0,8	56	485	0,9
487	0,4	60	487	0,5
0.000488	+0,2	2.64	0.000488	+0,5
489	+0,1	68	489	0,0
489	-0,2	72	489	-0,5
487	0,5	76	487	0,5
485	0,8	80	485	0,8
0.000481	-0,9	2.84	0.000481	-1,1
478	1,0	88	478	1,4
473	1,5	92	473	1,6
466	1,6	96	466	1,9
460	1,8	3.00	460	2,1
0.000452	-2,1	3.04	0.000452	-2,3
443	2,4	08	443	2,6
433	2,5	12	433	2,9
423	2,6	16	423	2,9
412	2,8	20	412	3,1
0.000401	-2,9	3.24	0.000401	-3,4
389	3,0	28	389	3,5
377	3,2	32	377	3,5
363	3,3	36	363	3,6
351	3,3	40	351	3,9
0.000337	-3,4	3.44	0.000337	-4,0
324	3,4	48	324	4,0
310	3,5	52	310	3,9
296	3,5	56	296	3,9
282	3,5	60	282	4,1
0.000268	-3,5	3.64	0.000268	-4,0
254	3,5	68	254	3,9
240	3,4	72	240	3,9
227	3,3	76	227	3,9
214	3,4	80	214	3,8
0.000200	-3,3	3.84	0.000200	-3,5
188	3,0	88	188	3,5
176	2,9	92	176	3,3
165	2,6	96	165	3,0
0.000155	-2,4	4.00	0.000155	-3,0

Applied Constant: +0.000290.

# SATELLITE III

## Tables of the Phenomena

### Equations of the Reduction

LIX

Ecl Oc	R	3 Sh Tr
00005	00	0 000050
43	1	42
36	2	35
30	3	8
5	4	1
0	5	16
0 0 16	06	0 000011
13	7	8
11	8	6
11	9	5
11	10	6
0 000 13	11	0 00 9
16	2	1
21	3	16
26	4	2
31	5	8
0 000037	16	0 000035
44	7	43
51	8	51
58	9	59
0 00 064	20	0 000066

Appli dC t t + 005

LX

S	E O S T	S	E O S T
00	00001	40	d 0 000004
2	7	2	3
4	5	4	
6	3	6	2
8	2	8	3
10	2	50	4
12	0 000003	52	0 000007
4	4	4	10
6	7	6	13
8	10	8	16
20	13	60	17
22	0 000016	62	0 000018
4	17	4	18
6	18	6	17
8	18	8	15
30	17	70	13
32	0 000015	72	0 000010
4	1	4	7
6	9	6	4
8	6	8	3
40	0 000004	80	0 0 0002

Appli dC t t +

LXI

D	E O S T	D	E O S T
00	d 0 000010	40	d 0 000007
2	1	2	6
4	13	4	5
6	14	6	4
8	15	8	3
10	16	50	
12	0 000017	52	0 000002
4	18	4	2
6	18	6	
8	18	8	2
20	18	60	3
22	0 00 18	62	0 000004
4	17	4	5
6	16	6	6
8	15	8	7
30	14	70	8
32	0 000 13	72	0 000010
4	1	4	12
6	10	6	13
8	8	8	14
40	0 000007	80	0 000015

Appli dC t t + 000

LXII

Ecl Oc	N	3 Sh Tr
d 0 000004	1850	d 0 000036
	55	38
1	60	39
1	65	39
	70	38
3	75	37
0 000005	1880	0 000035
8	85	32
11	90	29
15	95	25
18	1900	22
0 000022	1905	0 000018
26	10	14
29	15	11
32	20	8
0 000033	1925	0 000007
d 0 000033	1925	d 0 000007
35	30	5
35	35	5
35	40	5
34	45	6
32	50	8
0 000029	1955	0 000011
6	60	14
3	65	17
19	70	21
16	75	24
0 000013	1980	0 00 027
10	85	30
7	90	33
6	95	34
0 000005	2000	0 000035

Appli dC t t +



# SATELLITE III

## Tables of the Phenomena

LXIII

Equation of the Reduction

Occultations

O γ	0 <sup>d.0</sup>	0 <sup>d.2</sup>	0 <sup>d.4</sup>	0 <sup>d.6</sup>	0 <sup>d.8</sup>	1 <sup>d.0</sup>	1 <sup>d.2</sup>	1 <sup>d.4</sup>	1 <sup>d.6</sup>	1 <sup>d.8</sup>	2 <sup>d.0</sup>	2 <sup>d.2</sup>	2 <sup>d.4</sup>	2 <sup>d.6</sup>	2 <sup>d.8</sup>	3 <sup>d.0</sup>	3 <sup>d.2</sup>	3 <sup>d.4</sup>	3 <sup>d.6</sup>	3 <sup>d.8</sup>	4 <sup>d.0</sup>																					
a 0	+	9	+	8	+	8	+	7	+	6	+	5	+	4	+	3	+	1	0	-	1	-	3	-	4	-	6	-	6	-	7	-	8	-	8	-	9	-	8	-	8	
10	+	54	+	53	+	50	+	46	+	41	+	34	+	26	+	18	+	8	-	1	-	10	-	19	-	27	-	35	-	42	-	47	-	51	-	53	-	54	-	53	-	50
20	+	97	+	95	+	91	+	83	+	74	+	62	+	48	+	32	+	16	-	1	-	18	-	34	-	49	-	63	-	75	-	84	-	92	-	96	-	97	-	95	-	90
30	+	137	+	135	+	129	+	119	+	105	+	88	+	68	+	46	+	23	-	2	-	26	-	48	-	71	-	89	-	107	-	121	-	130	-	136	-	137	-	135	-	129
40	+	174	+	172	+	164	+	150	+	132	+	111	+	86	+	58	+	29	-	2	-	33	-	61	-	89	-	113	-	135	-	152	-	165	-	172	-	174	-	171	-	162
50	+	206	+	202	+	193	+	177	+	156	+	132	+	101	+	68	+	35	-	2	-	39	-	72	-	105	-	134	-	159	-	180	-	195	-	203	-	206	-	202	-	191
60	+	230	+	227	+	217	+	200	+	176	+	148	+	113	+	76	+	39	-	3	-	43	-	81	-	118	-	150	-	179	-	202	-	219	-	228	-	230	-	226	-	215
70	+	249	+	245	+	234	+	215	+	190	+	159	+	122	+	83	+	42	-	3	-	46	-	88	-	127	-	162	-	193	-	218	-	236	-	246	-	249	-	245	-	232
80	+	261	+	257	+	245	+	225	+	199	+	167	+	129	+	87	+	44	-	3	-	48	-	92	-	134	-	170	-	203	-	228	-	247	-	258	-	261	-	256	-	243
90	+	264	+	260	+	248	+	228	+	201	+	169	+	130	+	88	+	44	-	3	-	49	-	93	-	135	-	172	-	205	-	231	-	250	-	261	-	264	-	259	-	246
100	+	260	+	256	+	243	+	225	+	197	+	166	+	128	+	86	+	43	-	3	-	48	-	91	-	132	-	169	-	201	-	228	-	246	-	257	-	260	-	255	-	242
110	+	248	+	244	+	233	+	214	+	189	+	159	+	122	+	82	+	41	-	3	-	46	-	87	-	127	-	162	-	192	-	217	-	235	-	245	-	248	-	243	-	231
120	+	229	+	225	+	215	+	197	+	174	+	146	+	113	+	77	+	38	-	3	-	42	-	81	-	117	-	149	-	177	-	197	-	217	-	226	-	229	-	224	-	213
130	+	202	+	199	+	190	+	175	+	155	+	129	+	100	+	68	+	33	-	2	-	37	-	72	-	103	-	132	-	158	-	175	-	192	-	200	-	202	-	199	-	189
140	+	170	+	167	+	160	+	147	+	130	+	109	+	84	+	57	+	28	-	2	-	31	-	60	-	87	-	111	-	132	-	149	-	161	-	168	-	170	-	167	-	158
150	+	134	+	132	+	126	+	115	+	102	+	86	+	65	+	45	+	22	-	1	-	25	-	47	-	68	-	87	-	104	-	117	-	127	-	132	-	134	-	131	-	125
160	+	92	+	91	+	87	+	80	+	70	+	59	+	45	+	31	+	16	-	1	-	18	-	33	-	48	-	60	-	71	-	81	-	88	-	91	-	92	-	91	-	86
170	+	48	+	48	+	46	+	42	+	37	+	31	+	24	+	16	+	9	-	1	-	9	-	17	-	25	-	32	-	37	-	43	-	46	-	48	-	48	-	48	-	45
180	+	5	+	5	+	3	+	3	+	3	+	2	+	2	+	1	+	1	-	0	-	1	-	1	-	2	-	2	-	3	-	3	-	5	-	5	-	5	-	5	-	3
190	-	41	-	40	-	39	-	36	-	31	-	27	-	20	-	14	-	6	+	1	+	7	+	15	+	21	+	27	+	32	+	36	+	39	+	40	+	41	+	40	+	39
200	-	85	-	84	-	80	-	73	-	65	-	54	-	42	-	28	-	14	+	1	+	15	+	30	+	43	+	55	+	66	+	74	+	81	+	84	+	85	+	84	+	79
210	-	127	-	125	-	119	-	110	-	97	-	81	-	63	-	42	-	22	+	1	+	23	+	45	+	65	+	83	+	99	+	111	+	120	+	125	+	127	+	124	+	118
220	-	164	-	162	-	154	-	142	-	125	-	105	-	81	-	55	-	28	+	2	+	31	+	58	+	84	+	107	+	128	+	144	+	156	+	163	+	164	+	162	+	154
230	-	198	-	195	-	186	-	171	-	150	-	127	-	97	-	66	-	33	+	2	+	37	+	69	+	101	+	129	+	153	+	173	+	187	+	196	+	198	+	194	+	184
240	-	224	-	221	-	211	-	194	-	171	-	144	-	110	-	74	-	38	+	3	+	42	+	79	+	115	+	146	+	175	+	197	+	212	+	222	+	224	+	220	+	209
250	-	245	-	242	-	230	-	212	-	187	-	157	-	120	-	82	-	41	+	3	+	46	+	87	+	125	+	159	+	190	+	215	+	232	+	243	+	245	+	241	+	229
260	-	258	-	254	-	242	-	223	-	197	-	166	-	128	-	86	-	43	+	3	+	48	+	91	+	132	+	169	+	201	+	226	+	244	+	255	+	258	+	254	+	240
270	-	264	-	260	-	248	-	228	-	201	-	169	-	130	-	88	-	44	+	3	+	49	+	93	+	135	+	172	+	205	+	231	+	250	+	261	+	264	+	259	+	246
280	-	261	-	257	-	245	-	225	-	199	-	167	-	129	-	87	-	44	+	3	+	48	+	92	+	134	+	170	+	203	+	228	+	247	+	258	+	261	+	256	+	243
290	-	252	-	248	-	236	-	217	-	192	-	161	-	123	-	84	-	42	+	3	+	47	+	88	+	129	+	164	+	196	+	220	+	238	+	249	+	252	+	247	+	234
300	-	235	-	230	-	219	-	202	-	178	-	150	-	116	-	79	-	39	+	3	+	43	+	83	+	120	+	153	+	182	+	203	+	221	+	231	+	235	+	229	+	218
310	-	210	-	207	-	197	-	182	-	160	-	134	-	103	-	70	-	35	+	2	+	39	+	74	+	107	+	137	+	164	+	184	+	199	+	208	+	210	+	206	+	196
320	-	179	-	176	-	168	-	155	-	137	-	115	-	88	-	60	-	29	+	2	+	33	+	63	+	91	+	117	+	139	+	157	+	170	+	177	+	179	+	176	+	167
330	-	144	-	142	-	135	-	124	-	109	-	92	-	70	-	48	-	23	+	2	+	26	+	51	+	73	+	94	+	111	+	125	+	137	+	142	+	144	+	141	+	133
340	-	104	-	102	-	97	-	90	-	79	-	66	-	52	-	35	-	18	+	1	+	20	+	36	+	53	+	68	+	80	+	91	+	98	+	102	+	104	+	102	+	97
350	-	60	-	59	-	57	-	52	-	45	-	39	-	30	-	20	-	10	+	1	+	12	+	21	+	31	+	39	+	46	+	53	+	57	+	59	+	60	+	59	+	56
360	-	15	-	15	-	15	-	14	-	11	-	10	-	8	-																											

No Constant has been applied.

The unit equals 0<sup>d.000001</sup>.

This equation applies for Occultations only.

Its natural sign must be regarded.

# SATELLITE III

## Tables of the Phenomena

LXIII *continued*

Equation of the Reduction

Occultations

$\gamma$	$4^d 0$	$4^d 2$	$4^d 4$	$4^d 6$	$4^d 8$	$5^d 0$	$5^d 2$	$5^d 4$	$5^d 6$	$5^d 8$	$6^d 0$	$6^d 2$	$6^d 4$	$6^d 6$	$6^d 8$	$7^d 0$	$7^d 2$	$7^d 4$	$7^d 6$	$7^d 8$	$8^d 0$
0	- 8	- 7	- 6	- 5	- 4	- 3	- 1	0	+ 1	+ 3	+ 4	+ 6	+ 6	+ 7	+ 8	+ 9	+ 9	+ 8	+ 8	+ 7	+ 6
10	- 50	- 45	- 41	- 33	- 5	- 17	- 8	+	+ 11	+ 0	+ 8	+ 36	+ 42	+ 47	+ 51	+ 53	+ 54	+ 52	+ 49	+ 45	+ 40
20	- 90	- 8	- 73	- 6	- 47	- 30	- 14	+ 3	+ 19	+ 36	+ 51	+ 65	+ 77	+ 85	+ 92	+ 96	+ 97	+ 95	+ 89	+ 81	+ 71
30	- 19	- 117	- 13	- 85	- 66	- 43	- 0	+ 4	+ 8	+ 51	+ 73	+ 9	+ 108	+ 122	+ 13	+ 136	+ 137	+ 134	+ 18	+ 116	+ 101
40	- 6	- 148	- 13	- 108	- 83	- 54	- 5	+ 5	+ 35	+ 64	+ 93	+ 116	+ 137	+ 154	+ 166	+ 173	+ 174	+ 170	+ 161	+ 147	+ 128
50	- 191	- 175	- 154	- 18	- 98	- 64	- 30	+ 6	+ 42	+ 76	+ 109	+ 138	+ 161	+ 181	+ 195	+ 204	+ 206	+ 201	+ 190	+ 173	+ 151
60	- 215	- 97	- 173	- 143	- 110	- 73	- 33	+ 7	+ 48	+ 85	+ 1	+ 155	+ 182	+ 204	+ 220	+ 229	+ 230	+ 26	+ 214	+ 195	+ 170
70	- 32	- 212	- 187	- 154	- 119	- 79	- 36	+ 8	+ 51	+ 93	+ 132	+ 167	+ 196	+ 20	+ 237	+ 247	+ 249	+ 244	+ 230	+ 10	+ 183
80	- 43	- 3	- 196	- 16	- 125	- 82	- 38	+ 8	+ 53	+ 97	+ 138	+ 175	+ 205	+ 230	+ 248	+ 259	+ 261	+ 255	+ 241	+ 221	+ 192
90	- 46	- 25	- 198	- 164	- 126	- 83	- 38	+ 8	+ 54	+ 98	+ 140	+ 177	+ 208	+ 33	+ 251	+ 62	+ 264	+ 58	+ 244	+ 223	+ 194
100	- 4	-	- 194	- 161	- 124	- 81	- 37	+ 8	+ 53	+ 96	+ 137	+ 174	+ 04	+ 230	+ 247	+ 258	+ 260	+ 254	+ 40	+ 220	+ 190
110	- 31	- 211	- 186	- 154	- 119	- 78	- 35	+ 7	+ 50	+ 9	+ 132	+ 166	+ 195	+ 219	+ 235	+ 246	+ 48	+ 42	+ 229	+ 209	+ 182
120	- 13	- 194	- 171	- 142	- 19	- 7	- 33	+ 7	+ 46	+ 85	+ 11	+ 153	+ 180	+ 21	+ 218	+ 227	+ 229	+ 224	+ 212	+ 193	+ 168
130	- 189	- 173	- 15	- 125	- 97	- 64	- 9	+ 6	+ 41	+ 75	+ 107	+ 135	+ 160	+ 179	+ 193	+ 01	+ 202	+ 198	+ 187	+ 171	+ 149
140	- 158	- 145	- 18	- 16	- 81	- 54	- 4	+ 5	+ 34	+ 63	+ 9	+ 115	+ 134	+ 150	+ 162	+ 169	+ 170	+ 166	+ 157	+ 144	+ 125
150	- 15	- 114	- 10	- 83	- 63	- 42	- 19	+ 4	+ 28	+ 50	+ 70	+ 90	+ 105	+ 118	+ 127	+ 133	+ 134	+ 131	+ 14	+ 113	+ 98
160	- 86	- 79	- 69	- 58	- 44	- 29	- 13	+ 3	+ 19	+ 34	+ 49	+ 6	+ 73	+ 82	+ 88	+ 92	+ 92	+ 90	+ 86	+ 79	+ 68
170	- 45	- 4	- 36	- 30	- 4	- 15	- 7	+ 1	+ 10	+ 18	+ 6	+ 3	+ 39	+ 43	+ 46	+ 48	+ 48	+ 47	+ 45	+ 41	+ 35
180	- 3	- 3	- 3	- 2	- 2	- 1	-	+ 1	+ 1	+ 1	+ 2	+ 2	+ 3	+ 3	+ 5	+ 5	+ 5	+ 5	+ 3	+ 3	+ 3
190	+ 39	+ 35	+ 31	+ 26	+ 19	+ 13	+ 6	- 1	- 8	- 16	-	- 28	- 32	- 37	- 39	- 41	- 41	- 40	- 38	- 35	- 30
200	+ 79	+ 7	+ 64	+ 53	+ 41	+ 27	+ 13	- 3	- 17	- 32	- 45	- 57	- 67	- 75	- 81	- 85	- 85	- 83	- 78	- 71	- 63
210	+ 118	+ 19	+ 97	+ 79	+ 61	+ 40	+ 19	- 4	- 26	- 47	- 67	- 85	- 100	- 112	- 10	- 126	- 127	- 14	- 117	- 108	- 93
220	+ 154	+ 140	+ 13	+ 10	+ 77	+ 5	+ 24	- 5	- 33	61	- 88	- 110	- 130	- 145	- 157	- 164	- 164	- 161	- 15	- 139	- 11
230	+ 184	+ 168	+ 148	+ 13	+ 92	+ 62	+ 9	- 6	- 40	- 73	- 105	- 133	- 155	- 174	- 188	- 196	- 198	- 193	- 183	- 167	- 145
240	+ 9	+ 19	+ 169	+ 140	+ 107	+ 7	+ 33	- 7	- 46	- 83	- 119	- 151	- 177	- 199	- 213	- 223	- 224	- 219	- 206	- 190	- 165
250	+ 29	+ 209	+ 184	+ 15	+ 117	+ 77	+ 35	- 7	- 50	- 91	- 130	- 164	- 193	- 15	- 233	- 243	- 245	- 40	- 227	- 207	- 180
260	+ 240	+ 2	+ 194	+ 161	+ 124	+ 81	+ 37	- 8	- 53	- 96	- 137	- 174	- 04	- 28	- 245	- 256	- 258	- 25	- 238	- 218	- 190
270	+ 46	+ 5	+ 198	+ 164	+ 126	+ 83	+ 38	- 8	- 54	- 98	- 140	- 177	- 208	- 33	- 251	- 262	- 64	- 258	- 44	- 223	- 194
280	+ 43	+ 3	+ 196	+ 162	+ 15	+ 8	+ 38	- 8	- 53	- 97	- 138	- 175	- 06	- 230	- 248	- 259	- 261	- 255	- 41	- 21	- 19
290	+ 34	+ 215	+ 189	+ 157	+ 10	+ 79	+ 36	- 8	- 51	- 93	- 133	- 169	- 198	- 22	- 239	- 250	- 52	- 246	- 233	- 213	- 185
300	+ 18	+ 199	+ 175	+ 145	+ 11	+ 73	+ 33	- 7	- 48	- 87	- 14	- 157	- 184	- 206	-	- 233	- 35	- 228	- 216	- 197	- 172
310	+ 196	+ 179	+ 157	+ 13	+ 100	+ 66	+ 30	- 6	- 43	- 78	- 111	- 14	- 166	- 186	- 00	- 208	- 210	- 205	- 194	- 178	- 154
320	+ 167	+ 153	+ 135	+ 111	+ 85	+ 57	+ 25	- 5	- 36	67	- 95	- 11	- 141	158	- 170	- 178	- 179	- 175	- 165	- 151	- 13
330	+ 133	+ 1	+ 18	+ 90	+ 68	+ 45	+ 20	- 4	- 3	- 53	- 76	- 97	- 113	- 16	- 137	143	- 144	- 141	- 13	- 121	- 106
340	+ 97	+ 89	+ 77	+ 64	+ 49	+ 33	+ 14	- 3	-	- 38	- 55	- 69	- 81	- 92	- 99	- 103	- 104	- 101	- 96	- 88	- 76
350	+ 56	+ 52	+ 45	+ 37	+ 28	+ 19	+ 8	-	- 13	- 22	- 3	- 4	- 47	- 53	- 57	- 60	- 60	- 59	- 56	- 51	- 44
360	+ 15	+ 14	+ 11	+ 10	+ 8	+ 5	+ 2	0	- 4	- 6	- 9	- 10	- 13	- 14	- 15	- 15	- 15	- 15	- 14	- 13	- 11
370	- 28	- 5	- 3	- 19	- 14	- 9	- 5	+ 1	+ 6	+ 11	+ 16	+ 20	+ 23	+ 26	+ 28	+ 3	+ 3	+ 29	+ 28	+ 5	+ 22
380	- 69	- 63	- 56	- 46	- 36	- 23	- 11	+ 2	+ 15	+ 8	+ 39	+ 50	+ 59	+ 65	+ 70	+ 74	+ 74	+ 72	+ 68	+ 6	+ 55
390	- 108	- 1	- 87	- 7	- 56	- 37	- 17	+ 4	+ 3	+ 43	+ 61	+ 78	+ 92	+ 10	+ 110	+ 115	+ 116	+ 114	+ 107	+ 99	+ 86
400	- 145	133	- 116	- 96	- 74	- 49	- 23	+ 5	+ 31	+ 58	+ 83	+ 14	+ 12	+ 137	+ 148	+ 154	+ 155	+ 152	+ 144	+ 131	+ 114

N C t th b d d d

Th t q l ooooo

Th q ti ppli f O l t t ly

It t alig m t b g d d

# SATELLITE III

## Tables of the Phenomena

LXIV

Equation of the Reduction

Transits

$\gamma$	O	0 <sup>d.0</sup>	0 <sup>d.2</sup>	0 <sup>d.4</sup>	0 <sup>d.6</sup>	0 <sup>d.8</sup>	1 <sup>d.0</sup>	1 <sup>d.2</sup>	1 <sup>d.4</sup>	1 <sup>d.6</sup>	1 <sup>d.8</sup>	2 <sup>d.0</sup>	2 <sup>d.2</sup>	2 <sup>d.4</sup>	2 <sup>d.6</sup>	2 <sup>d.8</sup>	3 <sup>d.0</sup>	3 <sup>d.2</sup>	3 <sup>d.4</sup>	3 <sup>d.6</sup>	3 <sup>d.8</sup>	4 <sup>d.0</sup>
a	0	- 11	- 11	- 10	- 9	- 9	- 7	- 5	- 4	- 2	0	+ 2	+ 4	+ 6	+ 7	+ 9	+ 9	+ 10	+ 11	+ 11	+ 11	+ 10
10		- 70	- 69	- 66	- 60	- 54	- 44	- 35	- 24	- 11	+ 1	+ 13	+ 25	+ 36	+ 45	+ 55	+ 61	+ 66	+ 69	+ 70	+ 69	+ 65
20		- 126	- 125	- 118	- 110	- 96	- 81	- 62	- 42	- 21	+ 1	+ 23	+ 45	+ 65	+ 82	+ 98	+ 111	+ 119	+ 125	+ 126	+ 124	+ 118
30		- 180	- 178	- 169	- 155	- 137	- 115	- 88	- 60	- 29	+ 2	+ 33	+ 64	+ 92	+ 117	+ 139	+ 157	+ 170	+ 178	+ 180	+ 176	+ 168
40		- 227	- 224	- 213	- 196	- 174	- 145	- 112	- 76	- 37	+ 2	+ 42	+ 80	+ 116	+ 148	+ 176	+ 199	+ 215	+ 225	+ 227	+ 223	+ 212
50		- 268	- 264	- 253	- 232	- 205	- 171	- 133	- 89	- 45	+ 2	+ 50	+ 95	+ 138	+ 175	+ 209	+ 235	+ 254	+ 265	+ 268	+ 263	+ 251
60		- 302	- 297	- 283	- 260	- 229	- 193	- 149	- 100	- 50	+ 3	+ 56	+ 106	+ 155	+ 197	+ 234	+ 264	+ 285	+ 298	+ 302	+ 295	+ 281
70		- 326	- 321	- 306	- 282	- 248	- 208	- 160	- 109	- 54	+ 3	+ 61	+ 116	+ 167	+ 212	+ 253	+ 285	+ 308	+ 322	+ 326	+ 319	+ 304
80		- 340	- 335	- 319	- 294	- 260	- 218	- 168	- 114	- 56	+ 3	+ 63	+ 121	+ 175	+ 223	+ 264	+ 298	+ 321	+ 336	+ 340	+ 333	+ 317
90		- 345	- 340	- 324	- 298	- 263	- 220	- 170	- 115	- 57	+ 3	+ 64	+ 122	+ 177	+ 225	+ 268	+ 302	+ 326	+ 341	+ 345	+ 338	+ 322
100		- 339	- 335	- 319	- 293	- 259	- 217	- 167	- 113	- 56	+ 3	+ 63	+ 120	+ 174	+ 222	+ 264	+ 297	+ 321	+ 336	+ 339	+ 333	+ 317
110		- 324	- 319	- 304	- 279	- 247	- 206	- 160	- 108	- 53	+ 3	+ 60	+ 115	+ 166	+ 211	+ 251	+ 283	+ 305	+ 319	+ 323	+ 317	+ 302
120		- 298	- 294	- 280	- 258	- 228	- 190	- 147	- 100	- 49	+ 3	+ 55	+ 108	+ 153	+ 194	+ 232	+ 261	+ 282	+ 295	+ 298	+ 292	+ 279
130		- 265	- 261	- 249	- 228	- 202	- 169	- 130	- 88	- 43	+ 2	+ 50	+ 94	+ 135	+ 173	+ 205	+ 231	+ 250	+ 262	+ 265	+ 260	+ 247
140		- 222	- 219	- 209	- 192	- 169	- 142	- 110	- 74	- 37	+ 2	+ 42	+ 79	+ 115	+ 145	+ 172	+ 195	+ 210	+ 220	+ 222	+ 218	+ 208
150		- 175	- 173	- 164	- 151	- 133	- 111	- 86	- 58	- 29	+ 2	+ 33	+ 62	+ 90	+ 114	+ 136	+ 153	+ 165	+ 173	+ 175	+ 172	+ 163
160		- 121	- 119	- 114	- 104	- 92	- 78	- 60	- 40	- 20	+ 1	+ 23	+ 42	+ 62	+ 79	+ 94	+ 105	+ 115	+ 120	+ 121	+ 119	+ 113
170		- 63	- 62	- 60	- 55	- 48	- 41	- 31	- 21	- 11	+ 1	+ 12	+ 22	+ 32	+ 42	+ 49	+ 56	+ 60	+ 63	+ 63	+ 62	+ 59
180		- 6	- 6	- 6	- 5	- 5	- 3	- 2	- 1	0	+ 1	+ 1	+ 2	+ 2	+ 3	+ 5	+ 5	+ 6	+ 6	+ 6	+ 6	+ 6
190		+ 54	+ 53	+ 50	+ 47	+ 41	+ 34	+ 27	+ 18	+ 9	- 1	- 10	- 19	- 28	- 35	- 42	- 47	- 50	- 53	- 54	- 52	- 50
200		+ 111	+ 110	+ 104	+ 97	+ 85	+ 70	+ 55	+ 37	+ 18	- 1	- 20	- 40	- 57	- 72	- 87	- 98	- 105	- 110	- 111	- 109	- 104
210		+ 166	+ 163	+ 156	+ 144	+ 126	+ 106	+ 82	+ 56	+ 27	- 1	- 30	- 59	- 85	- 109	- 129	- 146	- 157	- 164	- 166	- 162	- 155
220		+ 215	+ 212	+ 202	+ 186	+ 164	+ 137	+ 106	+ 72	+ 35	- 2	- 40	- 76	- 110	- 140	- 167	- 188	- 203	- 213	- 215	- 211	- 201
230		+ 258	+ 254	+ 242	+ 224	+ 197	+ 165	+ 128	+ 86	+ 43	- 2	- 47	- 91	- 133	- 168	- 201	- 227	- 244	- 255	- 258	- 253	- 241
240		+ 294	+ 289	+ 276	+ 253	+ 223	+ 188	+ 145	+ 98	+ 49	- 3	- 55	- 104	- 151	- 192	- 228	- 257	- 277	- 290	- 294	- 288	- 274
250		+ 320	+ 316	+ 301	+ 277	+ 244	+ 204	+ 158	+ 106	+ 53	- 3	- 60	- 113	- 164	- 209	- 249	- 281	- 303	- 317	- 321	- 314	- 299
260		+ 337	+ 333	+ 317	+ 291	+ 257	+ 215	+ 167	+ 113	+ 56	- 3	- 63	- 120	- 174	- 220	- 262	- 295	- 319	- 334	- 337	- 331	- 315
270		+ 345	+ 340	+ 324	+ 298	+ 263	+ 220	+ 170	+ 115	+ 57	- 3	- 64	- 122	- 177	- 225	- 268	- 302	- 326	- 341	- 345	- 338	- 322
280		+ 342	+ 337	+ 321	+ 296	+ 260	+ 218	+ 168	+ 114	+ 56	- 3	- 63	- 121	- 175	- 223	- 265	- 300	- 323	- 338	- 342	- 335	- 319
290		+ 328	+ 324	+ 308	+ 284	+ 251	+ 210	+ 162	+ 109	+ 54	- 3	- 62	- 116	- 169	- 215	- 255	- 288	- 310	- 325	- 328	- 322	- 307
300		+ 306	+ 302	+ 287	+ 265	+ 234	+ 195	+ 151	+ 102	+ 50	- 3	- 56	- 108	- 157	- 199	- 238	- 268	- 289	- 302	- 306	- 300	- 286
310		+ 275	+ 271	+ 257	+ 237	+ 209	+ 175	+ 135	+ 92	+ 45	- 2	- 50	- 97	- 140	- 179	- 213	- 240	- 259	- 272	- 275	- 269	- 256
320		+ 234	+ 231	+ 220	+ 203	+ 178	+ 149	+ 116	+ 78	+ 39	- 2	- 44	- 83	- 121	- 153	- 182	- 205	- 221	- 231	- 234	- 229	- 219
330		+ 187	+ 185	+ 176	+ 162	+ 143	+ 119	+ 93	+ 62	+ 31	- 2	- 35	- 66	- 97	- 122	- 146	- 164	- 177	- 185	- 187	- 183	- 175
340		+ 135	+ 134	+ 127	+ 117	+ 103	+ 87	+ 67	+ 45	+ 23	- 1	- 25	- 47	- 69	- 89	- 105	- 118	- 128	- 134	- 135	- 133	- 127
350		+ 79	+ 77	+ 74	+ 68	+ 60	+ 51	+ 39	+ 26	+ 13	- 1	- 15	- 27	- 40	- 52	- 61	- 69	- 74	- 78	- 79	- 77	- 74
360		+ 20	+ 20	+ 19	+ 18	+ 15	+ 13	+ 10	+ 6	+ 4	0	- 4	- 8	- 10	- 14	- 15	- 18	- 19	- 20	- 20	- 20	- 19
370		- 39	- 39	- 37	- 33	- 30	- 25	- 19	- 13	- 6	0	+ 7	+ 14	+ 20	+ 25	+ 31	+ 34	+ 37	+ 39	+ 39	+ 38	+ 36
380		- 97	- 95	- 91	- 84	- 74	- 61	- 48	- 33	- 16	+ 1	+ 18	+ 35	+ 50	+ 63	+ 75	+ 84	+ 91	+ 96	+ 97	+ 95	+ 90
390		- 152	- 150	- 142	- 132	- 116	- 97	- 75	- 51	- 25	+ 1	+ 28	+ 54	+ 78	+ 100	+ 118	+ 134	+ 143	+ 150	+ 152	+ 149	+ 142
400		- 203	- 200	- 191	- 175	- 154	- 130	- 100	- 68	- 33	+ 2	+ 37	+ 72	+ 104	+ 133	+ 157	+ 178	+ 192	+ 201	+ 203	+ 199	+ 190

No Constant has been added.

The unit equals 0<sup>d.000000</sup>.

This equation applies for Transits only.

Its natural sign must be regarded.

# SATELLITE III

## Tables of the Phenomena

LXIV *continued*

Equation of the Reduction

Transits

$\gamma$	$4^d 0$	$4^d 2$	$4^d 4$	$4^d 6$	$4^d 8$	$5^d 0$	$5^d 2$	$5^d 4$	$5^d 6$	$5^d 8$	$6^d 0$	$6^d 2$	$6^d 4$	$6^d 6$	$6^d 8$	$7^d 0$	$7^d 2$	$7^d 4$	$7^d 6$	$7^d 8$	$8^d 0$
0	+ 10	+ 9	+ 8	+ 6	+ 5	+ 4	+ 1	0	- 2	- 3	- 6	- 7	- 9	- 9	- 10	- 11	- 11	- 11	- 10	- 9	- 8
10	+ 65	+ 59	+ 53	+ 43	+ 33	+ 24	+ 10	- 14	- 26	- 26	37	- 47	- 55	62	- 67	- 70	- 70	- 68	- 65	- 59	- 52
20	+ 118	+ 109	+ 95	+ 79	+ 60	+ 40	+ 18	- 4	- 26	- 48	- 67	- 84	100	- 11	- 10	- 15	- 126	- 13	- 117	- 107	- 93
30	+ 168	+ 156	+ 135	+ 112	+ 85	+ 57	+ 6	- 6	- 37	- 67	- 95	- 11	- 141	- 159	- 171	- 179	- 18	- 176	- 166	- 152	- 13
40	+ 21	+ 194	+ 171	+ 142	+ 18	+ 7	+ 33	- 7	- 46	85	- 1	- 152	- 179	- 01	- 216	- 5	- 227	- 2	- 1	- 191	- 168
50	+ 51	+ 3	+ 02	+ 167	+ 128	+ 85	+ 39	- 9	- 55	- 101	- 143	180	- 12	- 38	- 256	- 266	- 268	- 26	- 249	- 227	- 198
60	+ 281	+ 58	+ 6	+ 188	+ 143	+ 95	+ 44	- 10	- 6	- 113	- 160	- 0	- 37	- 66	- 287	- 299	- 302	- 295	- 79	- 254	- 3
70	+ 304	+ 79	+ 245	+ 03	+ 154	+ 103	+ 47	- 1	- 67	- 11	- 172	- 218	- 57	- 88	- 310	- 323	- 326	- 318	- 301	- 275	- 240
80	+ 317	+ 91	+ 256	+ 13	+ 162	+ 108	+ 49	- 11	- 70	128	- 181	- 228	- 268	- 301	- 323	- 337	- 340	- 332	- 314	- 287	- 251
90	+ 32	+ 95	+ 59	+ 15	+ 164	+ 19	+ 50	- 11	- 71	- 19	- 183	- 31	- 7	- 305	- 328	- 342	- 345	- 337	- 319	- 291	- 254
100	+ 317	+ 90	+ 255	+ 1	+ 161	+ 107	+ 49	- 11	- 70	- 17	- 180	- 28	- 68	- 300	- 323	- 337	- 339	- 332	- 314	- 286	- 250
110	+ 3	+ 77	+ 43	+ 20	+ 154	+ 10	+ 47	- 10	- 66	- 121	- 17	- 17	55	- 86	307	320	323	- 316	- 99	- 273	- 238
120	+ 79	+ 55	+ 24	+ 186	+ 14	+ 95	+ 43	- 9	- 61	- 112	- 158	- 199	- 235	- 264	- 284	- 296	- 298	- 291	- 276	- 252	- 220
130	+ 47	+ 26	+ 199	+ 165	+ 15	+ 84	+ 38	- 8	- 55	- 99	140	- 177	- 208	- 33	- 251	- 63	- 65	- 259	- 245	- 23	- 195
140	+ 08	+ 191	+ 167	+ 139	+ 16	+ 70	+ 32	- 7	- 46	- 83	- 118	- 149	- 176	- 197	- 212	- 221	- 22	- 217	- 06	- 188	- 164
150	+ 163	+ 149	+ 131	+ 109	+ 83	+ 55	+ 26	- 5	- 36	- 65	- 93	117	- 138	- 154	- 166	174	- 175	- 171	- 161	- 147	- 19
160	+ 113	+ 103	+ 91	+ 75	+ 58	+ 38	+ 18	- 4	- 25	- 45	- 64	- 81	- 95	- 107	- 115	- 120	- 121	- 118	112	- 10	- 89
170	+ 59	+ 55	+ 48	+ 4	+ 30	+ 0	+ 10	-	- 13	- 24	- 33	- 43	50	- 56	- 60	- 63	- 63	- 6	- 59	- 54	- 47
180	+ 6	+ 5	+ 5	+ 3	+ 2	+ 1	0	1	-	-	3	- 3	- 5	- 5	- 6	- 6	- 6	- 6	- 5	- 5	- 5
190	- 50	- 46	- 40	- 34	6	- 17	- 8	+	+ 11	+ 0	+ 8	+ 36	+ 4	+ 48	+ 51	+ 53	+ 54	+ 53	+ 50	+ 45	+ 39
200	- 104	- 96	84	- 70	- 53	- 35	- 16	+ 4	+ 23	+ 42	+ 59	+ 74	+ 88	+ 98	+ 106	+ 110	+ 111	+ 109	+ 103	+ 94	+ 82
210	- 155	- 14	- 15	- 104	- 79	- 53	- 4	+ 5	+ 34	+ 62	+ 88	+ 111	+ 131	+ 147	+ 157	+ 164	+ 166	+ 162	+ 154	+ 140	+ 12
220	- 1	- 184	- 16	- 134	102	- 68	- 32	+ 7	+ 44	+ 81	+ 114	+ 144	+ 169	+ 190	+ 05	+ 213	+ 215	+ 210	+ 199	+ 181	+ 159
230	- 41	- 21	- 194	- 161	- 123	- 8	38	+ 8	+ 53	+ 97	+ 138	+ 173	+ 204	+ 229	+ 245	+ 56	+ 258	+ 252	+ 238	+ 218	+ 190
240	- 74	- 51	- 20	- 183	- 140	- 9	- 43	+ 9	+ 61	+ 110	+ 156	+ 197	+ 231	+ 259	+ 279	+ 91	+ 294	+ 287	+ 71	+ 247	+ 16
250	- 99	- 74	- 41	- 00	- 15	- 101	- 47	+ 10	+ 66	+ 119	+ 170	+ 215	+ 253	+ 284	+ 305	+ 318	+ 321	+ 313	+ 97	+ 271	+ 236
260	- 315	- 288	- 253	- 10	- 161	- 107	- 49	+ 11	+ 7	+ 127	+ 180	+ 226	+ 66	+ 298	+ 321	+ 335	+ 337	+ 330	+ 312	+ 284	+ 248
270	- 32	- 95	- 259	- 215	- 164	- 109	- 50	+ 11	+ 71	+ 129	+ 183	+ 231	+ 272	+ 305	+ 328	+ 342	+ 345	+ 337	+ 319	+ 91	+ 54
280	- 319	- 293	- 256	- 13	- 162	- 108	- 49	+ 11	+ 70	+ 128	+ 181	+ 228	+ 269	+ 303	+ 325	+ 339	+ 342	+ 334	+ 316	+ 288	+ 51
290	- 30	- 281	- 47	- 05	- 157	- 13	- 47	+ 10	+ 67	+ 122	+ 175	+ 220	+ 259	+ 90	+ 312	+ 36	+ 328	+ 321	+ 304	+ 277	+ 42
300	- 86	- 262	- 29	- 190	- 145	- 97	- 44	+ 10	+ 63	+ 115	+ 162	+ 205	+ 42	+ 271	+ 291	+ 303	+ 306	+ 299	+ 83	+ 58	+ 25
310	- 56	- 234	- 06	- 171	- 130	- 87	- 39	+ 9	+ 57	+ 103	+ 145	+ 184	+ 16	+ 242	+ 260	+ 72	+ 75	+ 269	+ 253	+ 231	+ 22
320	- 19	- 01	- 176	- 146	- 111	- 74	- 34	+ 7	+ 49	+ 87	+ 15	+ 157	+ 184	+ 207	+ 23	+ 232	+ 234	+ 29	+ 217	+ 198	+ 17
330	175	- 161	141	- 117	- 90	- 59	- 8	+ 6	+ 39	+ 70	+ 100	+ 125	+ 148	+ 166	+ 178	+ 186	+ 187	+ 183	+ 173	+ 158	+ 137
340	- 17	- 115	- 12	- 84	- 64	- 43	- 2	+ 4	+ 8	+ 50	+ 7	+ 91	+ 17	+ 119	+ 129	+ 134	+ 135	+ 132	+ 16	+ 114	+ 100
350	- 74	- 68	- 59	- 49	- 37	- 25	- 12	+ 2	+ 16	+ 3	+ 42	+ 53	+ 6	+ 70	+ 75	+ 78	+ 79	+ 77	+ 73	+ 66	+ 58
360	- 19	- 18	- 15	- 13	- 10	- 6	3	+ 1	+ 4	+ 8	+ 11	+ 14	+ 16	+ 18	+ 19	+ 20	+ 0	+ 20	+ 19	+ 18	+ 15
370	+ 36	+ 33	+ 29	+ 24	+ 19	+ 13	+ 5	1	- 8	- 14	- 1	- 6	- 31	- 34	- 37	- 39	- 39	- 38	- 36	- 33	- 9
380	+ 90	+ 83	+ 73	+ 60	+ 46	+ 31	+ 13	- 3	- 0	- 36	- 51	- 64	- 76	- 85	- 92	- 96	- 97	- 94	- 89	- 82	- 71
390	+ 142	+ 130	+ 114	+ 95	+ 72	+ 48	+ 2	- 5	- 31	- 57	- 81	- 10	- 120	- 135	- 144	- 151	- 152	- 148	- 141	- 129	- 11
400	+ 190	+ 173	+ 15	+ 17	+ 96	+ 64	+ 30	7	- 41	- 76	- 107	- 136	- 160	- 179	- 193	- 02	- 03	- 199	- 188	- 171	- 150

N C t t h b d d d

Th it q l o o o o

Th q t l p p l i f T it ly

It t l g n m t b g a d d

# SATELLITE III

## Tables of the Phenomena

LXV

Corrections for Phase

Sh., Tr.

1	2	3	4	5	6
Additional Equation of Semi-duration.	<b>p</b>	Correcting Factor for Semi-duration.	$\Delta$ 0 <sup>d</sup> .001	Correcting Factor for Reduction.	$\Delta$ 0 <sup>d</sup> .001
d 0'000000	d <b>0'000</b>	'000000	0,0	'000000	0,0
o	'004	— 1	— 0,3	o	0,0
o	'008	2	0,5	— 1	— 0,1
o	'012	5	1,0	1	0,1
o	'016	10	1,3	2	0,3
o	'020	15	1,6	3	0,3
0'000000	<b>0'024</b>	— '00023	— 2,0	— '00004	— 0,4
o	'028	31	2,1	6	0,5
o	'032	40	2,4	8	0,5
o	'036	50	2,8	10	0,5
o	'040	62	3,1	12	0,6
0'000000	<b>0'044</b>	— '00075	— 3,4	— '00015	— 0,7
o	'048	89	3,6	18	0,8
o	'052	104	4,0	21	0,8
o	'056	121	4,4	24	0,9
o	'060	139	4,8	28	1,0
0'000000	<b>0'064</b>	— '00159	— 5,0	— '00032	— 1,0
o	'068	179	5,1	36	1,0
o	'072	200	5,5	40	1,1
o	'076	223	5,9	45	1,3
o	'080	247	6,1	50	1,3
0'000000	<b>0'084</b>	— '00272	— 6,4	— '00055	— 1,3
I	'088	298	6,8	60	1,4
I	'092	326	7,1	66	1,4
I	'096	355	7,5	71	1,5
I	'100	386	7,8	78	1,6
0'000000	<b>0'104</b>	— '00417	— 8,1	— '00084	— 1,6
I	'108	451	8,4	91	1,6
I	'112	484	8,5	97	1,6
I	'116	519	8,9	104	1,9
I	'120	555	9,3	112	1,9
0'000000	<b>0'124</b>	— '00593	— 9,6	— '00119	— 1,9

1	2	3	4	5	6
Additional Equation of Semi-duration.	<b>p</b>	Correcting Factor for Semi-duration.	$\Delta$ 0 <sup>d</sup> .001	Correcting Factor for Reduction.	$\Delta$ 0 <sup>d</sup> .001
d 0'000001	d <b>0'128</b>	— '00632	— 9,8	— '00127	— 2,0
I	'132	671	10,0	135	2,1
I	'136	712	10,4	144	2,1
I	'140	754	10,8	152	2,1
I	'144	798	11,3	161	2,3
I	'148	844	11,5	170	2,4
0'000002	<b>0'152</b>	— '00890	— 11,9	— '00180	— 2,5
2	'156	939	12,1	190	2,5
2	'160	987	12,3	200	2,5
2	'164	1037	12,6	210	2,5
2	'168	1088	12,9	220	2,6
0'000002	<b>0'172</b>	— '01140	— 13,1	— '00231	— 2,7
2	'176	1193	13,4	242	2,8
2	'180	1247	13,8	253	2,9
2	'184	1303	14,1	265	3,0
2	'188	1360	14,5	277	3,0
0'000003	<b>0'192</b>	— '01419	— 15,0	— '00289	— 3,0
3	'196	1480	15,3	301	3,1
3	'200	1541	15,4	314	3,3
3	'204	1603	15,6	327	3,3
3	'208	1666	15,9	340	3,4
0'000003	<b>0'212</b>	— '01730	— 16,3	— '00354	— 3,5
3	'216	1796	16,5	368	3,5
3	'220	1862	16,6	382	3,5
4	'224	1929	17,1	396	3,5
4	'228	1999	17,5	410	3,6
0'000004	<b>0'232</b>	— '02069	— 17,9	— '00425	— 3,9
4	'236	2142	18,4	441	4,0
4	'240	2216	18,6	457	4,0
4	'244	2291	18,8	473	4,0
4	'248	2366	18,8	489	4,0
0'000004	<b>0'252</b>	— '02441	— 18,8	— '00505	— 4,0

The Argument is the Annual Parallax  $p$ , as computed from the Approximate Tables IV, V, VI.

No Constant has been added to Column 1, which gives an Additional Equation of the Semiduration. Columns 3 and 5 must be multiplied respectively into the Semiduration as taken from Tables XLIX-LV, and the Reduction as taken from Tables LVI-LXIV, and the products taken as further corrections to these quantities.

When  $p$  is positive, these corrections apply to *Ingress* for the Shadow and *Egress* for Transit of Disc; when  $p$  is negative, they apply to *Egress* for the Shadow and *Ingress* for Transit of Disc.

# SATELLITE III

## Tables of the Phenomena

LXVI

Standard Light Curves in Eclipse

Lat ( $\gamma$ ) <sub>0</sub>	10	15 05	16 04	17 03	18 02	19 01
-30	m 0 01	m 0 01	m 0 01			
28	0	0	0			
26	04	04	04	04	04	04
24	05	05	05	05	5	05
22	08	08	07	7	7	07
20	11	11	1	1	10	09
-18	0 15	0 15	0 15	0 15	0 15	0 14
16	19	19	19	19	19	18
14	23	23	3	3	3	3
12	28	28	8	8	28	8
10	34	34	34	34	33	33
-08	4	0 4	0 4	4	0 41	0 40
06	49	49	49	49	49	48
04	58	58	58	58	58	57
-02	67	67	67	67	67	66
00	0 75	0 75	0 75	0 75	75	0 75

Lat ( $\delta$ ) <sub>0</sub>	10	15 05	16 04	17 03	18 02	19 01
00	m 0 75	m 0 75	m 0 75			
+02	0 83	0 83	0 83	0 83	0 83	83
04	0 95	95	0 95	0 95	0 95	0 94
06	1 10	1 10	1 10	1 10	1 09	1 09
08	1 6	1 25	1 5	1 5	1 4	1 24
10	1 41	1 4	1 40	1 40	1 39	1 38
+12	1 59	1 58	1 58	1 57	1 56	1 54
14	1 79	1 78	1 77	1 76	1 75	1 7
16	1	2 00	1 99	1 98	1 95	1 91
18	26	23	2 2	21	2 18	1
20	2 56	2 51	51	2 48	2 45	35
+22	91	2 85	2 84	80	2 75	61
24	3 29	3 1	3 19	3 14	3 08	2 91
26	3 74	3 63	3 60	3 54	3 45	3 1
28	4 36	4 17	4 13	4 05	3 90	3 56
+30	5 37	4 96	4 93	4 75	4 52	3 99

l h l t b l h w t l S t a d d L i g h t f E l i p f d i f f l i t t d i t m f M g i t d d t l C d i t (k) F L t t d (k)  
i t i f t l m l t l p l f t l S d i w h l h i t f l y p l t l m f m t h C t f t l S t l l t e d i

LXVII

Mean Motion in Light Curve

Lat	$\Delta(\gamma)_0$ for 1	3 $\Delta$ 00	4 Lat
008	00421	26	192
10	47	3	90
12	513	21	88
14	55	19	86
16	589	18	84
18	62	16	82
020	00654	15	180
22	683	14	78
24	711	14	76
26	737	13	74
28	76	1	72
030	00785	11	170
32	807	11	68
34	829	10	66
36	849	1	64
38	868	10	62
040	00887	9	160
42	904	9	58
44	91	8	56
46	937	8	54
48	95	8	52
050	00967	7	150
52	980	7	48
054	00993	7	146

Lat	$\Delta(\delta)_0$ for 1	3 $\Delta$ 00	4 Lat
054	00993	7	146
56	1006	6	44
58	1018	6	42
60	1029	5	40
62	1039	5	38
64	1049	5	36
066	01058	5	134
68	1 67	4	32
70	1075	4	30
72	1083	4	28
74	1090	4	26
076	01097	3	124
78	1103	3	22
80	1108	3	20
82	1113		18
84	1117		16
086	01121	2	114
88	11 4	2	12
90	1128		10
92	1130	1	08
94	1132	1	06
096	01133	1	104
98	1134	0	02
100	01134	0	100

Th E<sub>1</sub> t l f t h i s T b l t d b y t h t f T b l LXVIII g l t h m t l f (k) l d t h A g m t i t h L t i t u d t a k f m T b l XXXVII XLII

LXVIII

Equation of Motion

Var Lat	- 01 00 + 01	Var Lat
01	+13 0 -13	19
02	+10 0 -10	18
03	+8 0 -8	17
04	+7 0 -7	16
05	+7 0 -7	15
06	+6 0 -6	14
10	+6 0 -6	10

Thi t l t b p p l d t t l t y f  
T b l LXVII t h n i t l o o o o T h A g m t  
t h v i t l d t l L t i t d t k f m  
T b l XXXIII XLII



# SATELLITE IV



## Approximate Tables

of

## Heliocentric and Geocentric Conjunction



# SATELLITE IV

## Approximate Tables of Conjunction

I

Epochs of Conjunction

1	2	3	4	5	6	7	8	9	
Year	Conjunction	Variation for 100 <sup>d</sup>	$\alpha$	Variation for 100 <sup>d</sup>	$\beta$	$\gamma$	$\delta$	$\epsilon$	
1850	0°46'17	+ 1,1	1785°9	+ '03	332°78	365°2	12°297	9°19	The constant $-0^d.3500$ has been applied to each entry in column 2.
1851	4°04'02	+ 2,1	2154°6	+ '05	302°47	3°2	13°685	10°61	
*1852	7°61'91	+ 1,1	2523°4	+ '03	272°17	6°6	15°074	12°03	
1853	10°19'77	0,0	2892°0	'00	241°87	9°9	16°463	13°46	The constant $-0^d.300$ has been applied to each entry in columns 6, 7, 8, 9.
1854	13°77'58	+ 1,1	3260°6	+ '03	211°57	13°2	1°161	14°88	
1855	0°60'08	- 3,2	3612°7	- '08	164°51	365°1	2°486	16°24	
*1856	4°17'78	0,0	3980°9	'00	134°19	3°1	3°873	0°96	For Eclipses the argument $\gamma$ is not wanted.
1857	6°75'59	- 1,1	16°8	- '03	103°89	6°4	5°261	2°38	
1858	10°33'37	0,0	385°3	'00	73°58	9°7	6°648	3°80	
1859	13°91'18	+ 1,1	753°9	+ '03	43°27	13°0	8°037	5°22	Column 2 corrected by the equations from the following tables, gives Superior Conjunction as required for Eclipses and Occultations. To find Inferior Conjunction for Shadows and Transits, add (or subtract) one half the synodic period, i.e. $8^d.3768$ , to the numbers of columns 2, 4, 6, 7, 8, 9.
*1860	0°73'68	+ 2,1	1105°8	+ '05	395°10	364°9	9°363	6°57	
1861	3°31'57	+ 3,2	1474°6	+ '08	364°80	2°9	10°752	8°00	
1862	6°89'50	0,0	1843°4	'00	334°50	6°2	12°141	9°42	
1863	10°47'31	- 3,2	2212°0	- '08	304°19	9°6	13°529	10°84	
*1864	14°05'02	- 6,4	2580°3	- '17	273°89	12°9	14°916	12°26	
1865	16°62'61	- 5,3	2948°3	- '14	243°57	16°2	16°301	13°67	
1866	3°44'86	- 9,6	3299°7	- '25	196°51	2°8	0°933	15°03	
1867	7°02'32	- 3,2	3667°3	- '08	166°20	6°1	2°319	16°45	
*1868	10°60'03	0,0	4035°6	'00	135°90	9°4	3°706	1°18	
1869	13°17'84	+ 4,2	71°6	+ '11	105°59	12°7	5°094	2°60	
1870	0°00'45	+ 7,4	423°9	+ '19	58°53	364°5	6°420	3°95	
1871	3°58'54	+ 8,4	793°1	+ '22	28°23	2°6	7°811	5°37	
*1872	7°16'66	+ 6,4	1162°5	+ '17	396°81	5°9	9°202	6°79	
1873	9°74'72	+ 3,2	1531°7	+ '08	366°51	9°2	10°592	8°22	
1874	13°32'64	- 1,1	1900°6	- '03	336°20	12°6	11°981	9°64	
1875	0°15'06	- 6,4	2252°3	- '17	289°14	364°4	13°306	11°00	
*1876	3°72'64	- 7,4	2620°3	- '19	258°83	2°4	14°692	12°41	
1877	6°30'19	- 7,4	2988°2	- '19	228°52	5°8	16°077	13°83	
1878	9°87'73	- 6,3	3356°0	- '16	198°22	9°1	0°772	15°24	
1879	13°45'32	- 1,1	3724°0	- '03	167°91	12°4	2°158	16°67	
*1880	0°27'74	+ 3,2	4075°7	+ '08	120°85	364°2	3°483	1°33	
1881	2°85'66	+ 6,3	112°0	+ '16	90°55	2°3	4°872	2°75	
1882	6°43'72	+ 6,3	481°2	+ '16	60°24	5°6	6°262	4°17	
1883	10°01'76	+ 4,2	850°4	+ '11	29°93	8°9	7°652	5°59	
*1884	13°59'72	+ 1,1	1219°3	+ '03	398°51	12°2	9°042	7°01	
1885	16°17'58	- 2,1	1588°0	- '05	368°21	15°6	10°430	8°43	
1886	2°99'96	- 4,2	1939°6	- '11	321°15	2°1	11°755	9°79	
1887	6°57'62	- 4,2	2307°8	- '11	290°84	5°4	13°142	11°21	
*1888	10°15'28	- 3,2	2676°0	- '08	260°54	8°8	14°528	12°62	
1889	12°72'98	- 1,1	3044°3	- '03	230°23	12°1	15°915	14°04	
1890	16°30'76	+ 3,2	3412°8	+ '08	199°94	15°4	0°612	15°47	
1891	3°13'33	+ 4,2	3764°9	+ '11	152°87	2°0	1°938	0°13	
*1892	6°71'30	+ 4,2	4133°9	+ '11	122°56	5°3	3°328	1°55	
1893	9°29'27	+ 4,2	170°2	+ '11	92°25	8°6	4°718	2°97	
1894	12°87'24	+ 2,1	539°2	+ '05	61°95	11°9	6°108	4°39	
1895	16°45'14	- 1,1	908°0	- '03	31°65	15°2	7°497	5°82	
*1896	3°27'55	- 2,1	1259°7	- '05	383°47	1°8	8°821	7°17	
1897	5°85'29	- 4,2	1628°1	- '11	353°16	5°1	10°208	8°59	
1898	9°42'95	- 3,2	1996°3	- '08	322°86	8°4	11°595	10°00	
1899	13°00'64	- 2,1	2364°6	- '05	292°55	11°8	12°982	11°42	
1900	16°58'38	+ 1,1	2732°9	+ '03	262°24	15°1	14°369	12°84	
Period	16°75'36	...	4332°6	...	398°88	365°3	16°690	16°69	

# SATELLITE IV

## Approximate Tables of Conjunction

I continued

Epochs of Conjunction

Year	Conjunction	3 V ation for 100 <sup>d</sup>	4 $\alpha$	5 Va at on fo 100 <sup>d</sup>	6 $\beta$	7 $\gamma$	8 $\delta$	9 $\epsilon$	
1900	16 5838	+ 1 1	<sup>d</sup> 273 9	+ 03	<sup>d</sup> 6 24	<sup>d</sup> 15 1	<sup>d</sup> 14 369	<sup>d</sup> 12 84	The constant - 0 <sup>d</sup> 3500 has been applied to each entry in column 2
1901	3 4088	+ 3 2	3084 9	+ 08	215 18	1 6	15 694	14 0	
1902	6 9881	+ 2 1	3453 7	+ 05	184 88	5 0	0 393	15 6	
1903	10 5671	0 0	38 5	00	154 57	8 3	1 78	35	The constant - 0 <sup>d</sup> 3 0 has been applied to each entry in columns 6 7 8 9
1904	14 1452	- 1 1	4191 1	- 03	1 4 27	11 6	3 170	1 77	
1905	16 7 3	- 2 1	227 0	- 05	93 96	14 9	4 558	3 19	
1906	3 5467	- 1	578 6	- 05	46 90	1 5	5 882	4 55	For Eclipses the argu ment $\gamma$ is not wanted
1907	7 1241	- 1 1	947 0	- 03	16 60	4 8	7 69	5 97	
1908	10 7018	0 0	1315 5	00	385 17	8 1	8 657	7 38	
1909	13 28 0	0 0	1684 0	00	354 87	11 4	10 045	8 80	Column 2 corrected by the equations from the following tables gives Superior Conjunction as required for Eclipses and Occultations To find Inferior Conjunction for Shadows and Transits add (or subtract) one half the synodic period i.e. 8 <sup>d</sup> 3768 to the numbers of columns 2 4 6 7 8 9
1910	0 1046	+ 1	2035 9	+ 05	307 79	363 3	11 370	10 16	
1911	3 6835	+ 1 1	2404 6	+ 3	77 50	1 3	12 759	11 58	
1912	7 621	+ 1 1	773 3	+ 03	47 0	4 6	14 147	13 00	
1913	9 8406	0	3142 0	00	16 89	8 0	15 536	14 4	
1914	13 4187	- 1	3510 6	- 05	186 59	11 3	0 33	15 84	
1915	0 4 5	- 1	3862 2	- 05	139 53	363 1	1 558	0 51	
1916	3 8199	- 3 2	4 30 6	- 08	109 2	1 2	2 945	1 93	
1917	6 3969	0 0	266	00	78 92	4 5	4 332	3 35	
1918	9 9751	+ 1 1	634 8	+ 03	48 61	7 8	5 72	4 76	
1919	13 5536	+ 2 1	1003 5	+ 05	18 30	11 1	7 109	6 18	
1920	0 3 89	+ 3 2	1355 5	+ 08	370 13	362 9	8 435	7 54	
1921	9583	+ 4 2	1724 4	+ 11	339 82	1 0	9 824	8 96	
1922	6 5379	- 4 2	093 4	- 11	3 9 52	4 3	11 214	10 38	
1923	10 1145	- 1 1	2461 6	- 03	279 21	7 6	1 600	11 80	
1924	13 69 3	- 7 4	830 0	- 19	248 91	11 0	13 988	13 22	
1925	16 677	- 8 4	3197 9	-	18 60	14 3	15 373	14 64	
1926	3 089	- 7 4	3549 0	- 19	171 54	0 8	0 005	15 99	
1927	6 6647	- 3 2	3916 8	- 08	141 22	4	1 390	0 72	
1928	10 416	+ 1 1	4 85 1	+ 03	110 9	7 5	2 777	13	
1929	1 8 02	+ 6 3	3 12	+ 16	80 61	10 8	4 165	3 55	
1930	16 4006	+ 7 4	690 4	+ 19	50 30	14 1	5 556	4 97	
1931	3 80	+ 7 4	104 9	+ 19	3 6	0 7	6 883	6 34	
*1932	6 8088	+ 6 3	1412 2	+ 16	371 84	4 0	8 274	7 76	
1933	9 3893	+ 2 1	1781 3	+ 05	341 53	7 3	9 664	9 18	
1934	1 968	- 2 1	2150 1	- 05	311 22	10 6	11 053	10 60	
1935	16 5456	- 6 3	518 5	- 16	280 9	14 0	12 440	12 01	
1936	3 3679	- 8 4	869 7	- 21	233 86	0 5	13 763	13 37	
1937	5 94 9	- 8 4	3 37 5	- 1	03 55	3 8	15 148	14 79	
1938	9 5179	- 4 2	3605 3	- 11	173 25	7 2	16 533	16 20	
1939	13 0945	- 1 1	3973 4	- 03	142 94	10 5	1 29	0 93	
1940	16 6723	+ 4 2	9 3	+ 11	112 63	13 8	617	2 35	
1941	4984	+ 6 3	361 5	+ 16	65 57	0 4	3 944	3 71	
1942	6 0789	+ 5 3	730 7	+ 14	35 27	3 7	5 334	5 14	
1943	9 6589	+ 3 2	1099 8	+ 08	4 97	7	6 723	6 56	
1944	13 383	0	1468 7	00	373 54	10 3	8 113	7 98	
1945	15 8164	- 2 1	1837 3	- 5	343 24	13 6	9 501	9 40	
1946	6401	- 4	2188 9	- 11	296 18	0 2	10 8 5	10 75	
1947	6 168	- 3 2	2557 1	- 08	265 87	3 5	12 213	12 17	
1948	9 7938	- 1	2925 3	- 05	235 56	6 8	13 599	13 58	
1949	12 3711	0 0	3 93 7	00	205 25	10 2	14 987	15 00	
1950	15 9493	+ 3 2	3662 3	+ 08	174 95	13 5	16 375	16 42	
Period	16 7536		4332 6		398 88	365 3	16 690	16 69	

# SATELLITE IV

## Approximate Tables of Conjunction

*I continued*

**Epochs of Conjunction**

1	2	3	4	5	6	7	8	9	
Year	Conjunction	Variation for 100 <sup>d</sup>	$\alpha$	Variation for 100 <sup>d</sup>	$\beta$	$\gamma$	$\delta$	$\epsilon$	
<b>1950</b>	<sup>d</sup> 15'9493	+ 3,2	<sup>d</sup> 3662'3	+ '08	<sup>d</sup> 174'95	<sup>d</sup> 13'5	<sup>d</sup> 16'375	<sup>d</sup> 16'42	The constant $-0^d.3500$ has been applied to each entry in column 2.
<b>1951</b>	2'7751	+ 3,2	4014'4	+ '08	127'90	0'0	1'010	1'10	
<b>*1952</b>	6'3544	+ 4,2	50'7	+ '11	97'59	3'4	2'399	2'52	The constant $-0^d.300$ has been applied to each entry in columns 6, 7, 8, 9.
<b>1953</b>	8'9340	+ 2,1	419'7	+ '05	67'28	6'7	3'790	3'94	
<b>1954</b>	12'5130	+ 1,1	788'5	+ '03	36'98	10'0	5'178	5'36	For Eclipses the argument $\gamma$ is not wanted.
<b>1955</b>	16'0915	- 1,1	1157'1	- '03	6'67	13'3	6'567	6'78	
<b>*1956</b>	2'9157	- 2,1	1508'9	- '05	358'50	365'2	7'891	8'13	Column 2 corrected by the equations from the following tables, gives Superior Conjunction as required for Eclipses and Occultations. To find Inferior Conjunction for Shadows and Transits, add (or subtract) one half the synodic period, i.e. $8^d.3768$ , to the numbers of columns 2, 4, 6, 7, 8, 9.
<b>1957</b>	5'4931	- 4,2	1877'2	- '11	328'19	3'2	9'279	9'55	
<b>1958</b>	9'0697	- 2,1	2245'4	- '05	297'89	6'5	10'665	10'97	
<b>1959</b>	12'6471	0,0	2613'8	'00	267'58	9'8	12'052	12'39	
<b>*1960</b>	16'2252	+ 2,1	2982'4	+ '05	237'27	13'2	13'440	13'81	
<b>1961</b>	2'0506	+ 2,1	3334'3	+ '05	190'22	365'0	14'766	15'17	
<b>1962</b>	5'6294	+ 1,1	3703'2	+ '03	159'91	3'0	16'155	16'59	
<b>1963</b>	9'2080	- 1,1	4071'9	- '03	129'60	6'4	0'853	1'32	
<b>*1964</b>	12'7857	- 2,1	107'8	- '05	99'30	9'7	2'241	2'74	
<b>1965</b>	15'3632	- 2,1	476'2	- '05	68'99	13'0	3'628	4'16	
<b>1966</b>	2'1870	0,0	827'8	'00	21'93	364'8	4'952	5'51	
<b>1967</b>	5'7651	- 3,2	1196'4	- '08	390'51	2'9	6'340	6'93	
<b>*1968</b>	9'3421	+ 1,1	1564'7	+ '03	360'20	6'2	7'727	8'34	
<b>1969</b>	11'9206	+ 2,1	1933'4	+ '05	329'89	9'5	9'115	9'76	
<b>1970</b>	15'4995	+ 2,1	2302'1	+ '05	299'59	12'8	10'504	11'19	
<b>1971</b>	2'3249	+ 1,1	2654'2	+ '03	252'53	364'7	11'830	12'55	
<b>*1972</b>	5'9035	+ 1,1	3022'9	+ '03	222'23	2'7	13'218	13'97	
<b>1973</b>	8'4819	- 2,1	3391'5	- '05	191'92	6'0	14'608	15'39	
<b>1974</b>	12'0594	- 3,2	3759'9	- '08	161'62	9'4	15'995	0'12	
<b>1975</b>	15'6363	- 2,1	4128'2	- '05	131'31	12'7	0'691	1'54	
<b>*1976</b>	2'4601	+ 4,2	147'2	+ '11	84'24	364'5	2'015	2'88	
<b>1977</b>	5'0398	- 7,4	516'2	- '19	53'95	2'6	3'405	4'31	
<b>1978</b>	8'6153	+ 1,1	884'1	+ '03	23'63	5'9	4'790	5'72	
<b>1979</b>	12'1938	+ 4,2	1252'7	+ '11	392'21	9'2	6'179	7'14	
<b>*1980</b>	15'7735	+ 4,2	1621'7	+ '11	361'91	12'5	7'569	8'57	
<b>1981</b>	1'5997	+ 3,2	1973'9	+ '08	314'85	364'3	8'895	9'93	
<b>1982</b>	5'1789	- 1,1	2342'8	- '03	284'55	2'4	10'285	11'35	
<b>1983</b>	8'7567	- 6,3	2711'3	- '16	254'24	5'7	11'672	12'77	
<b>*1984</b>	12'3325	- 7,4	3079'3	- '19	223'94	9'0	13'058	14'19	
<b>1985</b>	14'9079	- 9,5	3447'2	- '25	193'63	12'4	14'443	15'61	
<b>1986</b>	1'7290	- 6,3	3798'1	- '16	146'56	364'2	15'765	0'26	
<b>1987</b>	5'3049	- 2,1	4166'0	- '05	116'26	2'2	0'460	1'68	
<b>*1988</b>	8'8822	+ 2,1	201'8	+ '05	85'95	5'6	1'847	3'10	
<b>1989</b>	11'4612	+ 5,3	570'6	+ '14	55'64	8'8	3'236	4'52	
<b>1990</b>	15'0412	+ 8,4	939'7	+ '22	25'34	12'2	4'626	5'94	
<b>1991</b>	1'8689	+ 7,4	1292'3	+ '19	377'16	364'0	5'954	7'30	
<b>*1992</b>	5'4497	+ 5,3	1661'6	+ '14	346'86	2'1	7'345	8'72	
<b>1993</b>	8'0299	+ 1,1	2030'7	+ '03	316'56	5'4	8'735	10'15	
<b>1994</b>	11'6084	- 3,2	2399'4	- '08	286'26	8'7	10'123	11'57	
<b>1995</b>	15'1854	- 7,4	2767'6	- '19	255'95	12'0	11'510	12'99	
<b>*1996</b>	2'0073	- 8,4	3118'8	- '22	208'88	363'9	12'833	14'33	
<b>1997</b>	4'5823	- 7,4	3486'5	- '19	178'59	1'9	14'217	15'76	
<b>1998</b>	8'1578	- 4,2	3854'4	- '11	148'27	5'2	15'603	0'48	
<b>1999</b>	11'7344	0,0	4222'6	'00	117'96	8'6	0'299	1'90	
<b>*2000</b>	15'3124	...	258'6	'00	87'66	11'9	1'687	3'32	
Period	16'7536	...	4332'6	...	398'88	365'3	16'690	16'69	

# SATELLITE IV

## Approximate Tables of Conjunction

### II Motions of the Arguments

			3	4	5
Syn Rev	D te		$\beta \gamma$	$\delta$	$\epsilon$
			<sup>a</sup>	<sup>a</sup>	<sup>a</sup>
<b>1</b>	Ja ua y 16 7536		16 75	0 063	0 06
<b>2</b>	Februa y 5 71		33 51	1 6	13
<b>3</b>	19 607		5 26	189	19
<b>4</b>	Ma ch 8 014		67 01	252	26
<b>5</b>	24 7678		83 77	315	32
<b>6</b>	April 10 5 13		100 52	0 379	0 39
<b>7</b>	27 2749		117 27	44	45
<b>8</b>	May 14 0284		134 03	505	52
<b>9</b>	30 78 0		150 78	568	58
<b>10</b>	June 16 5355		167 54	631	65
<b>11</b>	July 3 891		184 29	0 694	0 71
<b>12</b>	0 04 6		01 04	757	77
<b>13</b>	August 5 796		217 80	820	84
<b>14</b>	22 5497		34 55	883	90
<b>15</b>	September 8 3033		251 30	946	97
<b>16</b>	25 0568		68 06	1 010	1 03
<b>17</b>	October 11 8104		84 81	1 073	1 10
<b>18</b>	28 5639		301 56	1 136	1 16
<b>19</b>	November 14 3175		318 32	1 199	1 23
<b>20</b>	December 1 0710		335 07	1 262	1 29
<b>21</b>	17 8 46		351 82	1 325	1 36
<b>22</b>	34 5781		368 58	1 388	1 42

I L p Y dimi i h t h d t i O l m by ft F b 8

# SATELLITE IV

## Approximate Tables of Conjunction

III      Equation of Conjunction      Argument  $\alpha$       Ec., Oc., Sh., Tr.

I	2	3	I	2	3	I	2	3	I	2	3	I	2	3
$\alpha$	Equation	$\Delta_{10^d}$	$\alpha$	Equation	$\Delta_{10^d}$	$\alpha$	Equation	$\Delta_{10^d}$	$\alpha$	Equation	$\Delta_{10^d}$	$\alpha$	Equation	$\Delta_{10^d}$
<sup>d</sup> 0	<sup>d</sup> 0°3000	+40	<sup>d</sup> 1000	<sup>d</sup> 0°5584	+3	<sup>d</sup> 2000	<sup>d</sup> 0°3584	-35	<sup>d</sup> 3000	<sup>d</sup> 0°0633	-15	<sup>d</sup> 4000	<sup>d</sup> 0°1732	+35
20	'3080	40	1020	'5588	+1	2020	'3514	35	3020	604	14	4020	'1802	35
40	'3160	40	1040	'5589	0	2040	'3445	35	3040	577	13	4040	'1873	36
60	'3239	40	1060	'5588	-1	2060	'3375	35	3060	552	12	4060	'1944	36
80	'3319	40	1080	'5585	2	2080	'3305	35	3080	529	11	4080	'2018	37
100	'3398	39	1100	'5580	3	2100	'3234	35	3100	508	10	4100	'2092	37
120	0°3476	+39	1120	0°5572	-4	2120	0°3164	-35	3120	0°0489	-9	4120	0°2167	+38
140	'3555	39	1140	'5563	5	2140	'3093	36	3140	472	8	4140	'2243	38
160	'3632	39	1160	'5551	6	2160	'3022	35	3160	457	7	4160	'2319	39
180	'3709	38	1180	'5538	7	2180	'2952	35	3180	444	6	4180	'2397	39
200	'3785	38	1200	'5522	9	2200	'2881	36	3200	434	5	4200	'2474	39
220	0°3861	+38	1220	0°5504	-10	2220	0°2810	-35	3220	0°0425	-4	4220	0°2553	+39
240	'3935	37	1240	'5484	11	2240	'2740	35	3240	418	3	4240	'2631	39
260	'4009	37	1260	'5462	12	2260	'2669	35	3260	414	2	4260	'2711	40
280	'4082	37	1280	'5438	12	2280	'2599	35	3280	411	-1	4280	'2790	40
300	'4154	36	1300	'5413	13	2300	'2529	35	3300	411	+1	4300	'2870	40
320	0°4224	+35	1320	0°5385	-14	2320	0°2460	-35	3320	0°0413	+2	4320	0°2950	+40
340	'4293	34	1340	'5356	15	2340	'2391	35	3340	418	3	4340	'3030	40
360	'4361	34	1360	'5325	16	2360	'2322	34	3360	424	4	4360	'3110	40
380	'4428	33	1380	'5291	17	2380	'2254	34	3380	433	5	4380	'3190	40
400	'4493	32	1400	'5257	18	2400	'2186	34	3400	444	6	4400	'3269	40
420	0°4557	+32	1420	0°5220	-19	2420	0°2119	-34	3420	0°0457	+7	4420	0°3349	+40
440	'4619	31	1440	'5182	20	2440	'2052	33	3440	472	8	4440	'3427	39
460	'4680	30	1460	'5142	21	2460	'1987	33	3460	490	9	4460	'3505	39
480	'4739	29	1480	'5100	21	2480	'1922	33	3480	509	10	4480	'3584	39
500	'4796	28	1500	'5057	22	2500	'1857	32	3500	531	12	4500	'3661	38
520	0°4852	+28	1520	0°5012	-23	2520	0°1794	-32	3520	0°0556	+13	4520	0°3737	+38
540	'4906	27	1540	'4966	24	2540	'1731	31	3540	582	14	4540	'3813	38
560	'4958	26	1560	'4918	24	2560	'1669	31	3560	610	15	4560	'3889	37
580	'5008	25	1580	'4869	25	2580	'1609	30	3580	641	16	4580	'3962	37
600	'5056	24	1600	'4818	26	2600	'1549	30	3600	674	17	4600	'4036	37
620	0°5103	+23	1620	0°4766	-26	2620	0°1490	-29	3620	0°0709	+18	4620	0°4109	+36
640	'5147	22	1640	'4713	27	2640	'1433	29	3640	746	19	4640	'4180	35
660	'5190	21	1660	'4659	28	2660	'1376	28	3660	785	20	4660	'4250	35
680	'5230	20	1680	'4603	28	2680	'1321	27	3680	826	21	4680	'4318	34
700	'5268	19	1700	'4546	29	2700	'1267	27	3700	869	22	4700	'4386	34
720	0°5305	+18	1720	0°4488	-29	2720	0°1214	-26	3720	0°0914	+23	4720	0°4452	+33
740	'5339	17	1740	'4429	30	2740	'1163	25	3740	'0961	24	4740	'4517	32
760	'5371	16	1760	'4369	30	2760	'1113	25	3760	'1010	25	4760	'4581	31
780	'5401	14	1780	'4308	31	2780	'1064	24	3780	'1061	26	4780	'4642	30
800	'5428	13	1800	'4246	31	2800	'1017	23	3800	'1114	27	4800	'4702	30
820	0°5454	+12	1820	0°4183	-32	2820	0°0971	-23	3820	0°1168	+28	4820	0°4760	+29
840	'5477	11	1840	'4119	32	2840	927	22	3840	'1225	29	4840	'4818	28
860	'5498	10	1860	'4054	33	2860	884	21	3860	'1283	30	4860	'4873	27
880	'5517	9	1880	'3989	33	2880	843	20	3880	'1343	30	4880	'4926	26
900	'5534	8	1900	'3923	33	2900	804	19	3900	'1404	31	4900	'4977	25
920	0°5548	+7	1920	0°3856	-34	2920	0°0766	-19	3920	0°1467	+32	4920	0°5027	+24
940	'5561	6	1940	'3789	34	2940	730	18	3940	'1531	33	4940	'5074	23
960	'5571	5	1960	'3721	34	2960	696	17	3960	'1597	33	4960	'5120	22
980	'5579	3	1980	'3653	34	2980	664	16	3980	'1664	34	4980	'5163	22
1000	0°5584	+3	2000	0°3584	-35	3000	0°0633	-15	4000	0°1732	+35	5000	0°5206	+21

The Equation of this Table to be added to the entries of columns 2, 6, 7, 8, 9 of Table I.

Applied Constant:  $+0^d3000$ .

# SATELLITE IV

## Approximate Tables of Conjunction

IV      Equation of Geocentric Conjunction      Argument  $\beta$       Oc, Tr

$\beta$	Equatio	$\Delta$	$\beta$	Equation	$\Delta_d$	$\beta$	Equation	$\Delta_{rd}$	$\beta$	Equatio	$\Delta_{rd}$
<sup>d</sup> 0	-0 00	-1	100	-0 6059	+ 15	200	-0 96	+ 68	<sup>d</sup> 300	+0 4075	+ 14
2	1 00	100	102	60 8	17	202	8 6	68	302	41 0	11
4	14 0	100	104	5992	19	204	691	68	304	4120	9
6	1599	99	106	5951	1	206	556	67	306	4135	7
8	1796	98	108	59 7	3	208	4	67	308	4146	4
10	199	98	110	5859	25	210	87	68	310	4151	+ 1
12	-0 186	- 97	112	-0 5806	+ 8	212	-0 015	+ 68	312	+0 4151	- 1
14	379	96	114	5749	30	214	- 17	67	314	4146	4
16	569	94	116	5688	32	216	+ 116	67	316	4137	6
18	756	93	118	5623	33	218	249	66	318	4121	9
20	294	91	120	5556	35	220	381	66	320	4100	12
22	-0 31 0	- 9	122	-0 5485	+ 37	222	+0 051	+ 65	322	+0 4075	- 14
24	3 98	88	124	5411	38	224	64	65	324	4043	17
26	3471	86	126	533	40	226	77	65	326	4006	20
28	3640	84	128	5 5	4	228	901	64	328	3964	23
30	3805	81	130	5165	43	230	10 9	64	330	3914	26
32	-0 3964	- 79	132	-0 5077	+ 45	232	+0 1156	- 63	332	+0 3861	- 29
34	4119	76	134	4987	46	234	1281	62	334	3800	32
36	4269	74	136	4893	47	236	1405	6	336	3734	35
38	4413	71	138	4798	49	238	1528	61	338	3661	38
40	4553	68	140	4698	51	240	1649	60	340	3584	40
42	-0 4686	- 65	142	-0 4595	+ 52	242	+0 1768	+ 59	342	+0 3500	- 44
44	4814	63	144	4491	53	244	1885	58	344	3410	47
46	4937	60	146	4384	54	246	01	58	346	3313	50
48	5 54	57	148	4 76	55	248	115	57	348	3 11	53
50	5165	54	150	4165	56	250	2 7	56	350	3103	55
52	-0 5 69	- 51	152	-0 405	+ 57	252	+0 2338	+ 55	352	+0 2990	- 58
54	5368	48	154	3937	58	254	445	53	354	870	62
56	5460	45	156	38 0	59	256	550	52	356	2744	65
58	5548	4	158	3702	60	258	2654	51	358	2612	67
60	5628	39	160	3581	61	260	2754	50	360	2476	70
62	-0 570	- 36	162	-0 3459	+ 6	262	+0 285	+ 48	362	+0 334	- 72
64	5772	33	164	3335	6	264	946	47	364	2187	75
66	5834	30	166	3 11	6	266	3038	46	366	033	78
68	5891	27	168	3086	63	268	31 8	44	368	1876	80
70	594	4	170	2958	64	270	3 13	4	370	1713	83
72	-0 5988	- 2	172	-0 28 9	+ 65	272	+0 3297	+ 41	372	+0 1546	- 85
74	60 8	18	174	7	65	274	3377	39	374	1375	87
76	6061	16	176	2570	65	276	3453	37	376	1 00	88
78	6090	13	178	2439	66	278	3526	36	378	1022	91
80	611	10	180	2307	66	280	3595	34	380	0838	93
82	-0 6130	- 8	182	0 2174	+ 67	282	+0 3660	+ 32	382	+0 0652	- 94
84	614	5	184	2041	67	284	3723	31	384	463	95
86	6149	3	186	1908	67	286	3782	28	386	272	97
88	615	0	188	1774	67	288	3835	26	388	+ 77	98
90	6148	+ 3	190	1639	68	290	3886	24	390	- 117	98
92	-0 614	+ 5	192	-0 1504	+ 68	292	+0 3932	+ 2	392	-0 0314	- 99
94	61 7	8	194	1368	68	294	3975	20	394	512	99
96	6110	10	196	1 33	68	296	4012	18	396	711	100
98	6086	13	198	1 98	68	298	4046	16	398	912	100
100	-0 6059	+ 15	200	-0 0962	+ 68	300	+0 4075	+ 14	400	-0 1113	-100

Appl dC tant oo Th Eq t fthi T bl t d by th fT bl V VI gl th A IP II p whi l m t b ppl d f O lt ti  
d T it to th t fth Cl 8 9 fT bl I dwhi h l g m to fT bl LXI f mp ti g th ff t fJ plter ph

# SATELLITE IV

## Approximate Tables of Conjunction

V	Equation of Geocentric Conjunction															Arguments $\alpha, \beta$					Occ., Tr.
$\beta$ $\alpha$	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°
0	700	643	587	538	496	463	439	426	424	431	445	465	491	518	547	576	605	640	655	679	711
100	784	726	666	611	559	516	479	453	437	432	433	443	460	479	503	527	552	576	599	621	644
200	867	810	748	686	627	572	525	486	457	438	428	426	434	446	462	481	501	521	544	566	587
300	947	890	827	760	695	631	573	522	481	450	428	416	413	417	427	440	457	474	493	512	531
400	1021	968	904	835	763	692	624	563	510	467	434	411	398	394	397	404	417	430	446	463	482
500	1089	1039	976	906	830	753	677	606	543	489	446	412	391	378	373	375	382	392	404	420	436
600	1148	1103	1043	973	895	813	730	652	579	516	462	42	359	308	25	153	154	160	170	181	195
700	1198	1159	1103	1034	955	871	783	698	618	546	485	431	394	365	34	112	111	116	121	135	151
800	1237	1205	1154	1088	1010	924	834	744	659	580	511	452	415	376	345	31	121	119	120	126	133
900	1266	1241	1196	1134	1058	974	882	789	700	616	541	476	423	384	351	30	116	115	118	121	124
1000	1282	1264	1225	1170	1099	1017	926	833	741	651	574	504	446	399	364	318	319	320	324	327	331
1100	1286	1277	1246	1197	1132	1053	965	874	781	693	611	537	475	424	384	353	310	317	320	323	326
1200	1278	1277	1255	1213	1155	1081	999	911	821	732	649	573	509	454	410	376	319	312	314	317	320
1300	1257	1265	1252	1219	1169	1103	1027	941	857	770	688	611	546	490	444	405	375	355	339	327	319
1400	1225	1241	1237	1214	1173	1116	1048	971	889	807	728	653	587	529	481	441	400	375	357	342	331
1500	1183	1206	1212	1198	1167	1121	1061	993	919	842	767	695	630	573	523	482	448	424	402	384	370
1600	1130	1161	1175	1172	1151	1116	1060	1009	943	871	804	737	664	618	569	528	492	475	444	428	406
1700	1067	1104	1128	1135	1126	1102	1065	1018	962	902	840	778	700	666	619	578	541	513	479	467	449
1800	997	1041	1073	1090	1092	1081	1056	1021	976	926	872	818	764	715	670	630	593	565	530	517	496
1900	921	969	1009	1036	1049	1050	1038	1016	985	945	901	854	808	763	721	683	649	620	594	570	548
2000	840	893	939	975	1000	1013	1015	1006	986	958	925	888	848	810	772	736	703	676	645	624	603
2100	756	812	864	908	944	969	984	988	982	967	945	917	887	854	821	790	759	731	707	681	660
2200	671	729	786	838	883	919	948	965	972	969	960	943	921	896	868	841	813	789	765	741	718
2300	587	645	705	763	818	865	905	936	957	967	969	963	949	923	912	889	865	843	820	798	776
2400	505	563	626	689	751	808	860	902	936	959	973	977	974	945	950	933	913	894	873	851	831
2500	427	483	546	614	682	748	810	864	910	944	970	986	992	991	984	972	957	941	921	900	885
2600	355	408	472	541	613	687	758	823	880	926	963	989	1004	1012	1012	1006	996	981	968	954	935
2700	291	339	401	472	548	627	706	779	846	902	949	986	1010	1026	1031	1031	1021	1009	1007	994	978
2800	234	278	336	406	484	567	652	733	808	874	931	976	1010	1033	1047	1053	1054	1049	1041	1030	1017
2900	187	225	278	346	425	511	600	686	768	842	907	960	1002	1034	1054	1066	1072	1071	1067	1059	1050
3000	152	182	231	296	373	459	550	640	727	807	880	940	989	1027	1053	1071	1082	1085	1084	1081	1074
3100	127	150	194	253	327	411	503	595	686	771	848	915	970	1013	1046	1069	1084	1091	1095	1094	1090
3200	116	130	166	220	290	371	460	553	645	733	814	885	944	993	1030	1058	1078	1089	1096	1099	1099
3300	115	114	150	197	260	336	423	513	605	694	776	851	914	974	1008	1040	1064	1079	1089	1096	1099
3400	128	126	145	183	239	309	391	478	567	655	738	814	879	937	979	1015	1043	1061	1075	1084	1091
3500	152	141	151	181	229	291	365	446	532	617	701	774	841	898	945	983	1015	1036	1053	1065	1075
3600	188	169	169	191	228	281	347	421	500	581	659	733	799	857	906	946	979	1003	1022	1037	1050
3700	235	208	200	210	238	280	336	401	472	547	621	691	755	813	862	903	938	961	986	1003	1019
3800	291	257	240	240	256	288	332	387	450	516	584	649	711	766	814	856	892	919	943	963	980
3900	357	316	290	280	285	304	337	381	432	490	549	609	665	717	764	805	841	869	894	916	935
4000	429	383	349	328	322	329	349	380	420	467	518	570	621	669	713	752	788	816	842	866	887
4100	506	456	414	384	366	362	368	386	414	450	491	534	579	621	662	700	734	761	788	812	834
4200	588	534	485	447	418	401	395	399	414	438	467	501	538	575	611	646	678	705	731	755	778
4300	673	616	562	515	476	447	428	419	420	432	450	473	501	531	562	593	623	648	673	697	720
4400	757	700	641	587	539	498	466	444	432	431	437	450	469	492	517	542	569	593	617	639	663
4500	841	783	721	661	605	553	509	474	450	435	429	432	441	456	475	496	518	539	566	583	606

Applied Constant: + 700.

The unit in this Table equals 0.0001.

# SATELLITE IV

## Approximate Tables of Conjunction

V continued

Equation of Geocentric Conjunction

Arguments  $\beta$

Oc, Tr

$\beta$	200 <sup>d</sup> 210 <sup>d</sup> 220 <sup>d</sup>	230 <sup>d</sup> 240 <sup>d</sup> 250 <sup>d</sup>	260 <sup>d</sup> 270 <sup>d</sup> 280 <sup>d</sup>	290 <sup>d</sup> 300 <sup>d</sup> 310 <sup>d</sup>	320 <sup>d</sup> 330 <sup>d</sup> 340 <sup>d</sup>	350 <sup>d</sup> 360 <sup>d</sup> 370 <sup>d</sup>	380 <sup>d</sup> 390 <sup>d</sup> 400 <sup>d</sup>
0	7 1 7 4 747	773 799 8 7	856 885 913	938 957 971	976 973 958	934 900 857	806 751 694
100	644 666 690	716 745 776	809 844 878	912 94 968	986 996 995	983 961 9 8	884 834 778
200	587 609 633	660 689 7 3	760 799 840	88 922 959	989 101 1025	10 6 1 15 993	958 914 862
300	533 554 578	604 634 669	709 752 799	848 897 944	987 10 2 1 48	1 63 1064 1053	10 7 989 941
400	48 502 5 4	551 58 616	658 7 4 756	811 868 9 5	978 10 5 1064	1091 1105 11 5	1 89 1059 1016
500	436 454 474	5 0 530 565	608 656 711	77 835 901	963 10 1 73	111 1138 1149	1143 1121 1084
600	395 411 43	453 481 516	559 609 666	730 800 87	943 1011 1 73	1124 1161 1184	1188 1176 1145
700	361 374 391	41 438 472	514 564 6	689 76 840	918 995 1065	11 7 1175 1 08	1222 1 17 1195
800	333 345 358	377 401 43	47 5 580	648 7 4 805	888 971 1050	11 1 1178 12 1	1245 1250 1235
900	314 3 333	349 370 398	436 483 540	607 684 767	855 943 10 8	1106 1172 1 24	1259 1271 1264
1000	303 307 315	3 8 346 371	405 449 504	569 645 729	818 908 999	1082 1156 1215	1258 1279 1 81
1100	3 0 301 305	314 329 35	380 420 47	534 608 690	779 871 964	1051 1130 1196	1246 1276 1 86
1200	3 5 303 304	310 3 336	363 398 444	50 57 651	737 8 9 9 3	101 1096 1167	1223 1 61 1279
1300	319 314 311	31 318 331	352 381 422	474 539 61	695 784 877	967 1052 1127	1189 1 33 1259
1400	341 33 3 6	3 4 3 5 333	348 371 406	451 509 577	654 738 828	916 1002 1079	1144 1195 12 8
1500	370 358 349	343 340 34	351 369 395	433 483 543	613 691 775	861 945 1023	1091 1145 1186
1600	406 392 379	369 362 359	362 37 391	4 0 462 513	574 644 722	802 883 960	1030 1089 1134
1700	449 432 417	403 39 384	381 384 395	414 446 486	538 598 667	740 816 890	960 1022 1071
1800	496 478 460	443 4 8 415	405 401 404	413 434 465	505 554 613	679 748 818	886 948 100
1900	48 5 8 508	488 470 452	437 4 5 419	419 429 447	476 514 56	617 679 743	808 87 926
2000	603 581 560	538 515 494	473 455 44	431 430 436	45 478 514	558 610 667	728 789 846
2100	660 638 615	591 566 540	514 489 467	448 436 43	433 446 469	502 543 592	647 705 762
2200	718 695 67	646 619 590	559 5 8 498	471 447 430	420 419 429	449 479 519	567 621 677
2300	776 753 7 9	7 3 674 642	607 57 535	498 465 435	412 398 395	402 42 45	490 539 593
2400	832 809 786	759 7 9 696	657 617 573	529 486 446	411 384 367	361 367 386	418 460 511
2500	885 864 841	814 784 749	709 664 616	564 51 462	416 376 346	3 7 321 329	351 387 433
2600	935 915 893	867 837 8 1	759 712 659	602 543 483	426 375 33	300 283 79	29 319 360
2700	978 961 943	916 887 85	808 760 7 4	64 576 509	443 382 327	284 253 239	241 61 95
2800	1017 1002 984	961 933 899	856 807 749	683 613 538	405 394 329	74 33 206	00 210 238
2900	1050 1037 10	1 00 975 94	901 851 79	725 651 57	492 413 339	274 3 186	168 168 190
3000	1 74 1064 1 51	1033 1010 980	940 89 834	767 690 608	5 3 438 357	284 23 178	150 14 154
3100	1090 1 85 1075	1060 1039 101	975 928 873	806 7 9 646	557 468 381	301 23 178	14 125 128
3200	1 99 1095 1089	1 78 1061 1037	1 04 961 908	843 767 684	595 504 412	3 7 253 190	146 1 1 116
3300	1 99 1099 1096	1088 1075 1 55	10 7 988 938	877 8 4 7 3	635 543 450	361 281 213	161 128 115
3400	1091 1094 1095	1 90 108 1066	104 10 9 964	908 840 76	676 586 49	4 2 318 246	187 148 126
3500	1075 1081 1085	1084 1080 107	1051 1 3 984	935 87 8 0	719 631 539	45 364 288	225 178 150
3600	1050 106 1067	1071 1 71 1 65	1052 1030 999	956 901 835	760 678 59	502 417 340	272 220 185
3700	1 19 1031 104	1049 1053 1053	1046 1031 1006	972 9 5 867	8 1 725 64	559 476 398	328 7 231
3800	980 995 10 9	10 0 1 9 1033	1033 10 5 1006	98 944 897	838 772 696	619 539 463	393 333 287
3900	935 953 970	983 997 1006	1 1 1011 1003	987 958 9 1	874 817 751	680 606 534	465 403 351
4000	887 906 924	94 959 973	985 99 99	985 968 94	905 860 804	742 675 607	540 478 423
4100	834 855 875	896 915 935	95 966 975	977 97 957	933 899 854	8 3 745 68	619 557 500
4200	778 800 8	845 868 891	914 934 95	964 969 967	955 934 902	862 813 759	700 639 582
4300	7 0 743 766	791 816 843	871 898 9 3	945 961 970	972 964 945	917 879 833	78 723 666
4400	663 685 708	734 762 793	8 4 857 890	9 1 948 969	983 989 983	968 942 905	860 807 751
4500	606 6 8 65	678 708 740	776 813 853	892 929 96	989 1007 1015	1 13 998 972	934 888 834

Appli d C t t +700

Th it q l oo



# SATELLITE IV

## Approximate Tables of Conjunction

VI	Equation of Geocentric Conjunction									Arguments $\beta, \gamma$						Oc., Tr.					
$\beta$ $\gamma$	$0^d$ $20^d$ $40^d$			$60^d$ $80^d$ $100^d$			$120^d$ $140^d$ $160^d$			$180^d$ $200^d$ $220^d$			$240^d$ $260^d$ $280^d$			$300^d$ $320^d$ $340^d$			$360^d$ $380^d$ $400^d$		
$0$	300	339	370	389	395	388	373	353	334	316	300	282	265	246	227	211	205	212	232	264	302
10	264	305	342	372	389	395	385	372	357	340	325	307	288	267	241	218	201	197	205	231	266
20	229	271	314	353	380	394	396	389	377	363	348	331	312	287	257	227	200	184	183	200	231
30	196	238	286	332	369	393	404	403	395	384	370	354	335	308	275	238	202	175	164	172	198
40	167	207	257	310	356	389	408	414	411	402	391	376	357	330	293	250	207	170	148	148	168
50	141	179	230	288	341	382	410	421	423	418	408	396	378	350	312	264	215	169	138	128	142
60	121	153	205	266	325	374	407	425	432	430	423	413	396	369	330	280	225	172	131	114	121
70	106	132	183	245	309	363	402	425	437	439	434	426	411	386	347	296	237	178	130	105	106
80	95	117	163	226	292	350	394	422	437	443	441	435	423	400	363	313	251	188	134	101	95
90	92	106	149	209	276	336	383	416	434	443	444	441	431	412	377	328	266	201	142	103	92
100	93	102	138	194	259	320	370	405	426	439	443	443	436	420	389	343	284	218	156	112	93
110	102	103	133	183	244	304	355	392	416	430	437	440	437	425	398	357	301	237	174	125	101
120	116	111	132	176	231	287	337	375	401	418	427	433	433	425	405	369	318	257	195	145	115
130	136	123	136	172	219	272	319	357	384	402	414	422	426	423	408	378	334	279	220	168	135
140	160	141	146	171	211	257	300	337	364	384	397	407	415	416	407	386	350	301	247	195	159
150	188	164	160	174	204	243	281	316	342	363	377	390	400	406	404	391	364	324	275	225	187
160	220	191	177	182	201	231	264	294	319	340	355	369	382	393	398	394	377	345	304	259	219
170	255	220	198	192	201	222	247	273	295	316	332	347	363	378	389	393	386	366	332	293	253
180	291	253	223	207	203	214	231	252	272	291	307	324	341	360	377	390	394	384	361	327	289
190	326	286	250	221	208	209	218	233	249	267	283	300	318	341	363	384	398	400	387	360	325
200	361	320	279	242	217	206	207	215	228	243	258	275	294	319	347	376	400	413	411	392	360
210	394	353	307	262	228	207	199	200	209	220	235	252	271	298	330	365	399	423	431	420	392
220	426	386	336	284	240	210	193	189	194	202	214	229	248	276	312	353	395	429	448	446	424
230	452	415	363	306	254	216	191	181	181	186	195	209	227	256	294	339	388	431	460	467	450
240	474	441	389	328	270	224	192	176	170	173	180	191	208	236	274	324	379	429	467	483	473
250	491	462	412	349	287	235	197	174	164	163	168	177	192	219	256	308	367	424	469	494	490
260	503	479	432	369	304	247	204	177	163	158	160	167	180	203	240	292	353	415	468	499	503
270	510	491	447	386	321	251	215	183	165	157	158	161	170	191	226	276	338	402	460	498	510
280	508	498	459	402	338	276	227	192	171	160	157	158	164	182	214	260	321	387	448	491	508
290	501	498	465	414	353	292	242	202	181	167	162	160	162	176	205	246	304	369	431	479	501
300	488	492	468	422	366	308	258	220	195	179	170	165	165	174	197	234	287	349	411	461	489
310	470	480	465	428	378	324	276	238	212	193	183	175	171	176	193	224	271	327	387	438	471
320	447	464	457	429	387	339	294	258	231	211	198	189	182	182	193	215	254	305	360	412	448
330	420	442	445	427	394	353	313	279	253	231	217	206	196	191	195	210	240	283	333	383	422
340	388	417	428	420	398	366	331	300	275	254	239	225	213	203	200	207	227	261	304	350	390
350	354	388	407	410	399	376	349	321	299	277	262	247	232	218	208	207	217	240	275	316	356
360	319	356	383	397	397	384	365	343	322	303	287	270	253	235	220	209	208	221	246	282	321
370	283	322	357	381	392	390	379	362	345	327	311	294	275	254	233	214	203	204	220	248	285
380	247	288	329	363	385	393	391	380	366	351	336	319	299	276	249	221	200	190	195	216	249
390	214	255	301	344	375	393	400	396	385	373	359	342	323	297	266	232	200	180	174	187	216
400	182	223	272	322	364	391	406	408	403	393	380	365	346	319	284	244	203	173	156	160	184

Applied Constant: + 300.

The unit equals  $0^d.0001$ .

# SATELLITE IV

## Approximate Tables of Conjunction

### Equations of Conjunction

VII

$\delta$	Equation	$\Delta$ $\sigma_d$	$\delta$	Equation	$\Delta$ $\sigma_d$
<b>d</b>					
<b>00</b>	00400	- 15	<b>100</b>	006 8	+ 12
<b>2</b>	371	15	<b>2</b>	651	11
<b>4</b>	341	15	<b>4</b>	673	11
<b>6</b>	312	14	<b>6</b>	694	10
<b>8</b>	84	14	<b>8</b>	71	9
<b>10</b>	256	14	<b>110</b>	7 9	8
<b>12</b>	00 29	- 13	<b>112</b>	00744	+ 7
<b>4</b>	3	13	<b>4</b>	757	6
<b>6</b>	178	12	<b>6</b>	768	5
<b>8</b>	155	11	<b>8</b>	777	4
<b>20</b>	133	11	<b>120</b>	784	3
<b>22</b>	0011	- 10	<b>122</b>	0 788	+ 2
<b>4</b>	93	9	<b>4</b>	791	+ 1
<b>6</b>	76	8	<b>6</b>	791	- 1
<b>8</b>	60	7	<b>8</b>	789	2
<b>30</b>	47	6	<b>130</b>	785	3
<b>32</b>	00035	- 5	<b>132</b>	00778	- 4
<b>4</b>	5	4	<b>4</b>	769	5
<b>6</b>	18	3	<b>6</b>	759	6
<b>8</b>	13		<b>8</b>	746	7
<b>40</b>	10	- 1	<b>140</b>	731	8
<b>42</b>	00009	0	<b>142</b>	00715	- 9
<b>4</b>	11	+ 1	<b>4</b>	697	10
<b>6</b>	14	2	<b>6</b>	677	11
<b>8</b>	0	3	<b>8</b>	655	11
<b>50</b>	8	4	<b>150</b>	632	12
<b>52</b>	00 38	+ 5	<b>152</b>	0 608	- 12
<b>4</b>	50	7	<b>4</b>	583	13
<b>6</b>	64	8	<b>6</b>	556	14
<b>8</b>	80	9	<b>8</b>	5 9	14
<b>60</b>	98	9	<b>160</b>	501	14
<b>62</b>	00117	+ 10	<b>162</b>	0047	- 15
<b>4</b>	138	11	<b>4</b>	443	15
<b>6</b>	161	12	<b>6</b>	413	15
<b>8</b>	185	1	<b>8</b>	384	15
<b>70</b>	210	13	<b>170</b>	355	15
<b>72</b>	00237	+ 14	<b>172</b>	003 5	- 15
<b>4</b>	64	14	<b>4</b>	297	14
<b>6</b>	9	14	<b>6</b>	269	14
<b>8</b>	32	14	<b>8</b>	41	14
<b>80</b>	349	15	<b>180</b>	215	13
<b>82</b>	00378	+ 15	<b>182</b>	0190	- 12
<b>4</b>	408	15	<b>4</b>	166	12
<b>6</b>	438	5	<b>6</b>	143	11
<b>8</b>	467	14	<b>8</b>	121	11
<b>90</b>	495	14	<b>190</b>	1 1	10
<b>92</b>	005 3	+ 14	<b>192</b>	00083	- 9
<b>4</b>	551	14	<b>4</b>	67	8
<b>6</b>	578	13	<b>6</b>	53	7
<b>8</b>	604	13	<b>8</b>	40	6
<b>100</b>	00628	+ 1	<b>200</b>	00029	- 5

Appl dC t t + ∞

VIII

$\delta$	Equation
<b>d</b>	
<b>00</b>	0 100
<b>04</b>	104
<b>08</b>	108
<b>12</b>	111
<b>16</b>	113
<b>20</b>	114
<b>24</b>	00113
<b>28</b>	11
<b>32</b>	109
<b>36</b>	106
<b>40</b>	10
<b>44</b>	00098
<b>48</b>	94
<b>52</b>	90
<b>56</b>	88
<b>60</b>	86
<b>64</b>	00086
<b>68</b>	88
<b>72</b>	9
<b>76</b>	93
<b>80</b>	97
<b>84</b>	00101
<b>88</b>	105
<b>92</b>	108
<b>96</b>	111
<b>100</b>	113
<b>104</b>	00114
<b>108</b>	113
<b>112</b>	112
<b>116</b>	109
<b>120</b>	105
<b>124</b>	00101
<b>128</b>	97
<b>132</b>	93
<b>136</b>	90
<b>140</b>	88
<b>144</b>	00086
<b>148</b>	86
<b>152</b>	88
<b>156</b>	90
<b>160</b>	94
<b>164</b>	00098
<b>168</b>	102
<b>172</b>	105
<b>176</b>	108
<b>180</b>	111
<b>184</b>	00113
<b>188</b>	114
<b>192</b>	113
<b>196</b>	112
<b>200</b>	00108

Appl dC ta t + ∞



# SATELLITE IV



## Tables

of the

Longitude on Jupiter's Orbit,  
Variation of the Radius Vector,  
and the Latitude

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

IX Values of Mean Longitude and the Arguments at Epoch

1	2	3	4	5	6	7	8	9	10	11
Date	Mean Long.	A	B	C	D	E	F	G	H	$\alpha$
1850	141°80383	d 0·85	d 1·63	d 7·110	d 13·405	d 11·78520	d 43·215	d 7·62	d 3·407	d 1785·1
1851	95·25885	1·73	1·23	8·935	11·128	9·59515	6·951	4·04	15·247	2150·2
*1852	48·71386	0·63	0·84	10·761	8·852	7·40510	20·845	0·46	10·270	2515·4
1853	23·73998	0·54	1·44	1·064	7·576	6·21506	35·739	6·26	6·294	2881·5
1854	337·19500	1·42	1·04	2·890	5·300	4·02501	49·634	2·68	1·317	3246·5
1855	290·65001	0·32	0·65	4·715	3·024	1·83497	13·370	7·48	13·157	3611·7
*1856	244·10503	1·20	0·25	6·541	0·748	16·33538	27·264	3·90	8·180	3976·4
1857	219·13115	1·10	0·85	9·367	16·166	15·14533	42·158	1·33	4·204	9·7
1858	172·58617	0·00	0·46	11·193	13·890	12·95529	5·895	6·12	16·044	374·6
1859	126·04118	0·88	0·06	0·495	11·614	10·76524	19·789	2·55	11·067	739·6
*1860	79·49620	1·76	4·18	2·321	9·338	8·57520	33·683	7·34	6·090	1104·7
1861	54·52232	1·66	0·27	5·147	8·062	7·38515	48·577	4·77	2·114	1470·9
1862	7·97734	0·57	4·38	6·973	5·786	5·19510	12·314	1·19	13·954	1836·2
1863	321·43235	1·45	3·99	8·799	3·510	3·00506	26·208	5·99	8·977	2201·2
*1864	274·88737	0·35	3·59	10·624	1·234	0·81501	40·102	2·41	4·000	2565·9
1865	249·91349	0·25	4·19	0·927	16·652	16·31542	4·838	8·21	0·024	2931·3
1866	203·36851	1·13	3·80	2·753	14·376	14·12538	18·733	4·63	11·864	3295·8
1867	156·82352	0·03	3·40	4·579	12·100	11·93533	32·627	1·05	6·887	3659·9
*1868	110·27854	0·91	3·00	6·404	9·824	9·74529	46·521	5·85	1·910	4024·6
1869	85·30466	0·81	3·61	9·230	8·548	8·55524	11·257	3·27	14·751	58·1
1870	38·75968	1·69	3·21	11·056	6·271	6·36520	25·152	8·07	9·774	423·5
1871	352·21469	0·60	2·81	0·359	3·995	4·17515	39·046	4·49	4·797	789·2
*1872	305·66971	1·48	2·42	2·184	1·719	1·98511	2·782	0·91	16·637	1155·0
1873	280·69583	1·38	3·02	5·010	0·443	0·79506	17·676	6·71	12·661	1521·6
1874	234·15085	0·28	2·62	6·836	14·861	15·29547	31·571	3·13	7·684	1886·9
1875	187·60586	1·16	2·23	8·662	12·585	13·10542	45·465	7·93	2·707	2251·8
*1876	141·06088	0·06	1·83	10·488	10·309	10·91538	9·201	4·35	14·547	2616·2
1877	116·08700	1·94	2·43	0·790	9·033	9·72533	24·095	1·77	10·571	2981·5
1878	69·54202	0·84	2·04	2·616	6·757	7·53529	37·990	6·57	5·594	3345·8
1879	22·99703	1·73	1·64	4·442	4·481	5·34524	1·726	2·99	0·617	3710·2
*1880	336·45205	0·63	1·24	6·268	2·205	3·15520	15·620	7·79	12·457	4075·1
1881	311·47817	0·53	1·85	9·093	0·929	1·96515	30·514	5·21	8·480	108·8
1882	264·93319	1·41	1·45	10·919	15·347	16·46556	44·409	1·64	3·504	474·4
1883	218·38820	0·31	1·05	0·222	13·071	14·27552	8·145	6·43	15·344	840·0
*1884	171·84322	1·19	0·66	2·048	10·795	12·08547	22·039	2·86	10·367	1205·4
1885	146·86934	1·09	1·26	4·873	9·519	10·89543	36·933	0·28	6·390	1571·5
1886	100·32436	1·97	0·86	6·699	7·243	8·70538	0·670	5·08	1·414	1936·3
1887	53·77937	0·88	0·47	8·525	4·967	6·51533	14·564	1·50	13·254	2300·9
*1888	7·23439	1·76	0·07	10·351	2·690	4·32529	28·458	6·30	8·277	2665·5
1889	342·26051	1·66	0·67	0·653	1·414	3·13524	43·352	3·72	4·300	3031·2
1890	295·71553	0·56	0·28	2·479	15·833	0·94520	7·089	0·14	16·141	3396·1
1891	249·17054	1·44	4·39	4·305	13·556	15·44561	20·983	4·94	11·164	3761·4
*1892	202·62556	0·34	3·99	6·131	11·280	13·25556	34·877	1·36	6·187	4126·8
1893	177·65168	0·24	4·60	8·957	10·004	12·06552	49·771	7·16	2·210	160·6
1894	131·10670	1·12	4·20	10·782	7·728	9·87547	13·508	3·58	14·051	526·0
1895	84·56171	0·03	3·80	0·085	5·452	7·68543	27·402	0·00	9·074	891·2
*1896	38·01673	0·91	3·41	1·911	3·176	5·49538	41·296	4·80	4·097	1256·1
1897	13·04285	0·81	4·01	4·737	1·900	4·30533	6·032	2·22	0·120	1621·9
1898	326·49787	1·69	3·61	6·562	16·318	2·11529	19·927	7·02	11·961	1986·5
1899	279·95288	0·59	3·22	8·388	14·042	16·61570	33·821	3·44	6·984	2351·2
1900	233·40790	1·47	2·82	10·214	11·766	14·42565	47·715	8·24	2·007	2716·0
Periods	...	1·98	4·51	12·523	16·694	16·69046	50·158	8·38	16·817	4332·6

Constant applied to each entry in Column 2:  $-1^{\circ}00000$ .

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

IX Values of Mean Longitude and the Arguments at Epoch

	3	4	5	6	7	8	9		
I	J	K	L	M	N	O	P	Q	R
1850	<sup>a</sup> 8 68994	<sup>a</sup> 6 74	5 61	4 7937	535	6 53	16 49	<sup>a</sup> 15 49	1 83
1851	6 53158	4 599	3 51	6659	0 496	1 52	10 4	14 74	15 0
1852	4 373 3	456	1 41	0 538	15 140	13 33	3 59	13 99	11 43
1853	3 1487	1 313	0 3	16 9 8	14 101	9 3	15	14 4	8 85
1854	1 05651	7 514	6 56	13 9699	1 62	4 31	8 57	13 49	5 7
1855	15 58717	5 371	4 46	11 64 0	10 0 3	16 1	1	1 74	1 69
1856	13 4 881	3 2 7	36	9 714	7 984	11 11	1 55	11 99	14 87
1857	1 27 46	2 084	1 6	8 5863	6 945	7 1	7 10	1 4	1 29
1858	1 1210	8 285	7 51	6 4584	4 906	2 9	0 65	11 49	8 71
1859	7 95374	6 14	5 41	4 3305	867	13 90	11 09	1 74	5 13
*1860	5 79539	3 999	3 31	0 7	0 828	8 89	4 63	9 99	1 56
1861	4 63703	856	1	1 0748	16 473	4 88	16 07	10 25	15 73
1862	47867	0 713	0 11	15 6346	14 433	16 69	9 6	9 50	12 15
1863	0 3 3	6 914	6 36	13 5067	12 394	11 69	3 17	8 75	8 57
1864	14 85 97	4 771	4 6	11 3788	10 355	6 68	13 60	8 00	5 00
1865	13 69 62	3 6 7	3 16	10 509	9 316	67	8 15	8 25	2 42
1866	11 534 6	1 484	1 6	8 1231	7 277	14 48	1 70	7 50	15 59
1867	9 37590	7 685	7 30	5 9952	5 38	9 47	1 13	6 75	12 02
*1868	7 1755	5 542	5 21	3 8673	3 199	4 46	5 68	6 00	8 44
1869	6 05919	4 399	3 11	2 7395	160	0 45	0 3	6 25	5 86
1870	3 90083	56	01	0 6116	0 121	12 26	10 66	5 50	2 28
1871	1 74248	0 113	8 25	15 1714	14 766	7 25	4 1	4 75	15 46
*1872	16 27314	6 314	6 15	13 0435	12 7 7	2 24	14 64	4 00	11 88
1873	15 11478	5 171	5 06	11 9156	11 688	15 05	9 19	4 25	9 30
1874	1 95642	3 0 8	2 96	9 7877	9 649	10 04	74	3 50	5 72
1875	10 79806	0 884	0 86	7 6599	7 610	5 3	13 18	2 75	2 14
*1876	8 63971	7 085	7 10	5 5320	5 571	0 02	6 72	2 00	15 3
1877	7 48135	5 942	6 00	4 4041	4 53	12 83	1 7	2 25	12 74
1878	5 3 299	3 799	3 91	763	493	7 83	11 71	1 50	9 16
1879	3 16464	1 656	1 81	0 1484	0 454	2 8	5 26	0 75	5 59
*1880	1 00628	7 857	8 05	14 7082	15 098	14 63	15 69	0 00	2 01
1881	16 53694	6 714	6 95	13 5803	14 059	10 62	10 24	0 26	16 18
1882	14 37858	4 571	4 85	11 4524	12 0 0	5 61	3 79	16 13	12 61
1883	1 0 3	4 8	2 76	9 3245	9 981	60	14 2	15 38	9 03
*1884	1 06187	0 85	0 66	7 1967	7 942	1 41	7 77	14 63	5 45
1885	8 90351	7 486	7 90	6 0688	6 903	8 40	2 32	14 88	2 87
1886	6 74515	5 34	5 8	3 94 9	4 864	3 39	12 75	14 13	16 05
1887	4 58680	3 199	3 70	1 8131	825	15 2	6 30	13 38	12 47
*1888	4 844	1 56	1 60	16 37 8	786	10 19	16 73	1 63	8 89
1889	1 70 8	8 57	0 51	15 449	16 431	6 18	11 8	12 88	6 31
1890	15 80074	6 114	6 75	13 1171	14 39	1 17	4 83	12 13	2 73
1891	13 64239	3 971	4 65	10 9892	1 353	12 98	15 27	11 39	15 91
*1892	11 484 3	1 8 8	55	8 8613	10 314	7 97	8 81	10 64	12 33
1893	10 3 567	0 685	1 45	7 7335	9 75	3 97	3 36	10 89	9 75
1894	8 1673	6 886	7 70	5 6 56	7 36	15 78	13 80	10 14	6 18
1895	6 00896	4 743	5 60	3 4777	5 197	10 77	7 35	9 39	2 60
1896	3 85060	599	3 50	1 3499	3 157	5 76	0 90	8 64	15 77
1897	2 692 4	1 456	40	0	118	1 75	1 33	8 89	13 19
1898	53389	7 657	0 3	14 7817	0 79	13 56	5 88	8 14	9 62
1899	15 06455	5 514	6 55	1 6539	14 724	8 55	16 31	7 39	6 04
1900	12 90619	3 371	4 45	10 5 6	12 685	3 54	9 86	6 64	46
Pe 10ds	16 689	8 344	8 34	16 6876	16 684	16 82	16 88	16 6	16 75

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# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values of Mean Longitude and the Arguments at Epoch

1	2	3	4	5	6	7	8	9	10	11
Date	Mean Long.	A	B	C	D	E	F	G	H	I
1900	233°40'7.90	1°47	2°81	10°211	11°266	14°42565	17°215	8°44	2°07	2°16
1901	186°86'29.1	0°37	2°42	12°040	9°190	12°23561	11°151	4°66	11°84	4°81.1
1902	140°31'79.3	1°25	2°01	1°342	7°214	10°45556	25°416	1°08	8°81	114°5.4
1903	93°77'29.4	0°15	1°63	3°168	4°938	7°85552	19°240	5°88	1°89	1811°6
*1904	47°22'79.6	1°03	1°23	4°994	2°662	5°66547	2°976	2°10	15°734	11°6.6
1905	22°25'40.8	0°94	1°84	7°820	1°386	1°47543	17°820	8°10	11°23	4°9.9
1906	335°70'09.9	1°82	1°44	9°616	15°804	2°28518	11°064	1°32	6°78	5°4.7
1907	289°16'41.1	0°72	1°04	11°471	11°528	0°95514	45°059	0°93	1°54	919°5
*1908	242°61'91.2	1°60	0°65	0°774	11°252	14°59575	9°495	5°74	11°443	13°4.4
1909	217°64'52.5	1°50	1°25	3°6.0	9°976	11°40571	24°259	1°17	9°66	167°4
1910	171°10'02.6	0°40	0°85	5°426	7°699	11°21566	18°151	7°96	4°69	10°15.4
1911	124°55'52.8	1°28	0°46	7°251	5°423	9°02561	1°920	4°39	16°531	24°0.6
*1912	78°01'02.9	0°18	0°06	9°077	1°147	6°83556	15°814	1°81	11°554	276°5
1913	53°03'64.2	0°09	0°66	11°903	1°871	5°64552	10°708	6°61	7°57	1111°8
1914	6°49'14.3	0°97	0°27	1°206	16°289	3°45547	44°602	1°03	2°60	1496°8
1915	319°94'64.5	1°85	4°38	3°031	14°013	1°26543	8°339	7°81	14°441	1861°6
*1916	273°40'14.6	0°75	3°98	4°857	11°737	15°76584	22°231	4°25	9°464	4126°4
1917	248°42'75.9	0°65	0°08	7°683	10°461	14°57579	17°127	1°67	5°487	119°5
1918	201°88'26.0	1°53	4°19	9°509	8°185	12°38575	0°061	6°47	0°510	614°5
1919	155°33'76.2	0°43	3°79	11°335	5°909	10°19570	14°758	2°89	12°151	989°6
*1920	108°79'26.3	1°31	3°40	0°637	3°631	8°09566	28°652	7°69	7°174	1154°8
1921	83°81'87.6	1°21	4°00	3°463	2°357	6°81561	41°546	5°11	1°397	1711°1
1922	37°27'37.7	0°12	3°60	5°289	0°081	4°62556	1°282	1°53	15°237	2086°5
1923	350°72'87.9	1°00	3°21	7°115	14°499	2°43552	21°117	6°11	1°161	2451°1
*1924	304°18'38.0	1°88	2°81	8°947	12°221	0°24547	15°071	8°75	5°284	2816°0
1925	279°20'93.3	1°78	3°41	11°766	10°947	15°74588	49°965	0°17	1°117	3181°3
1926	232°66'49.4	0°68	3°02	1°069	8°671	13°55584	11°701	4°97	11°147	3545°5
1927	186°11'99.6	1°56	2°62	2°895	6°395	11°36579	17°496	1°19	8°171	1909°8
*1928	139°57'49.7	0°46	2°22	4°720	4°118	9°17575	41°490	6°19	3°194	4274°5
1929	114°60'11.0	0°36	2°83	7°546	2°842	7°98570	6°226	3°61	16°044	108°0
1930	68°05'61.1	1°25	2°43	9°372	0°566	5°79566	20°120	0°03	11°557	6°1.6
1931	21°51'11.3	0°15	2°03	11°198	14°984	3°60561	11°015	4°83	6°081	1019°3
*1932	334°96'61.4	1°03	1°64	0°500	12°708	1°41557	47°909	1°26	1°104	1405°7
1933	309°99'22.7	0°93	2°24	3°326	11°432	0°22552	12°645	7°05	13°944	1771°6
1934	263°44'72.8	1°81	1°84	5°152	9°156	14°72593	26°639	3°48	8°967	2136°8
1935	216°90'23.0	0°71	1°45	6°978	6°880	12°53589	40°434	8°27	1°990	2501°6
*1936	170°35'73.1	1°59	1°05	8°804	4°604	10°34584	4°170	4°70	15°831	2866°0
1937	145°38'34.4	1°49	1°65	11°629	3°328	9°15579	19°064	2°12	11°854	1211°2
1938	98°83'84.5	0°40	1°26	0°932	1°052	6°96575	32°958	6°92	6°877	3595°4
1939	52°29'34.7	1°28	0°86	2°758	15°470	4°77570	46°853	3°34	1°900	3960°0
*1940	5°74'84.8	0°18	0°46	4°584	13°194	2°58566	10°589	8°14	13°741	4324°9
1941	340°77'46.1	0°08	1°07	7°409	11°918	1°39561	25°483	5°56	9°764	358°7
1942	294°22'96.2	0°96	0°67	9°235	9°642	15°89602	39°377	1°98	4°787	724°3
1943	247°68'46.4	1°84	0°27	11°061	7°366	13°70598	3°114	6°78	16°628	1089°8
*1944	201°13'96.5	0°74	4°39	0°364	5°090	11°51593	17°008	3°20	11°651	1455°1
1945	176°16'57.8	0°64	0°48	3°189	3°814	10°32589	31°902	0°62	7°674	1821°1
1946	129°62'07.9	1°52	0°08	5°015	1°537	8°13584	45°796	5°42	2°697	2185°9
1947	83°07'58.1	0°43	4°20	6°841	15°956	5°94579	9°533	1°84	14°537	2550°5
*1948	36°53'08.2	1°31	3°80	8°667	13°680	3°75575	23°427	6°64	9°561	2915°2
1949	11°55'69.5	1°21	4°41	11°493	12°404	2°56570	38°321	4°06	5°584	3281°0
1950	325°01'19.6	0°11	4°01	0°795	10°127	0°37566	2°057	0°48	0°607	3646°0
Periods	...	1°98	4°51	12°523	16°694	16°69046	50°158	8°38	16°817	4332°6

Constant applied to each entry in Column 2: - 1°00000.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

IX *continued* Values of Mean Longitude and the Arguments at Epoch

	3	4	5	6	7	8	9		
I	J	K	L	M	N	O	P	Q	R
						d	d	d	d
1900	12 9 619	3 371	4 45	10 5 60	1 685	3 54	9 86	6 64	2 46
1901	10 74783	1 8	35	8 3981	10 646	15 35	3 41	5 89	15 64
1902	8 58948	7 429	5	6 7 3	8 607	10 34	13 84	5 14	1 06
1903	6 4311	5 86	6 50	4 14 4	6 568	5 33	7 39	4 39	8 48
1904	4 27 76	3 143	4 4	2 145	4 5 9	0 3	94	3 64	4 90
1905	3 11441	1 999	3 30	0 8866	3 490	13 13	12 37	3 89	2 32
1906	0 956 5	8 01	1 20	15 4464	1 450	8 12	5 92	3 14	15 50
1907	15 48671	6 057	7 45	13 3185	16 095	3 11	16 36	2 39	11 92
1908	13 32835	3 914	5 35	11 1907	14 056	14 9	9 91	1 64	8 34
1909	1 16999	2 771	4 5	10 06 8	13 017	10 9	4 45	1 89	5 76
1910	10 01164	0 628	15	7 9349	10 978	5 91	14 89	1 14	2 19
1911	7 853 8	6 8 9	0 05	5 8071	8 939	0 90	8 44	0 40	15 36
*1912	5 69492	4 686	6 30	3 679	6 90	12 71	1 99	16 27	11 78
1913	4 53657	3 543	5 0	2 5513	5 861	8 70	13 4	16 52	9 1
1914	2 37821	1 4 0	3 10	0 4 34	3 82	3 69	6 97	15 77	5 63
1915	0 21985	7 601	1 00	14 983	1 783	15 50	0 5	15 0	2 05
1916	14 75 51	5 457	7 24	1 8553	16 428	10 49	10 95	14 27	15 22
1917	13 59215	4 314	6 14	11 7275	15 389	6 48	5 50	14 52	12 65
1918	11 43380	171	4 05	9 5996	13 350	1 47	15 93	13 77	9 07
1919	9 27544	0 0 8	1 95	7 4717	11 311	13 28	9 48	13 02	5 49
1920	7 11708	6 229	8 19	5 3438	9 272	8 27	3 03	12 28	1 91
1921	5 95873	5 086	7 09	4 2160	8 233	4 6	14 46	12 53	16 09
1922	3 80037	2 943	4 99	2 0881	6 194	16 07	8 01	11 78	1 51
1923	1 64 01	0 800	2 90	16 6479	4 155	11 06	1 56	11 03	8 93
*1924	16 17 67	7 01	0 80	14 5 00	2 115	6 06	12 00	10 28	5 35
1925	15 0143	5 858	8 4	13 3921	1 077	05	6 54	10 53	2 78
1926	12 85596	3 714	5 94	11 2643	15 721	13 86	0 09	9 78	15 95
1927	10 69760	1 571	3 84	9 1364	13 68	8 85	10 53	1 03	1 37
1928	8 53924	7 772	1 75	7 0085	11 643	3 84	4 08	8 8	8 79
1929	7 38089	6 629	0 65	5 8806	10 604	16 65	15 51	8 53	6 22
1930	5 22 53	4 486	6 89	3 7528	8 565	11 64	9 06	7 78	64
1931	3 06417	343	4 79	1 6249	6 526	6 63	2 61	7 03	15 81
*1932	0 90582	0 00	69	16 1847	4 487	1 6	13 04	6 28	12 24
1933	16 43648	7 401	1 60	15 0568	3 448	14 43	7 59	6 53	9 66
1934	14 7812	5 58	7 84	12 9 89	1 409	9 4	1 14	5 78	6 08
1935	1 11976	3 115	5 74	10 8011	16 054	4 41	11 57	5 03	2 50
*1936	9 96141	971	3 64	8 673	14 015	16 2	5 12	4 8	15 68
1937	8 80305	8 17	54	7 5453	1 976	1 1	16 55	4 53	13 10
1938	6 64469	6 0 9	0 45	5 4174	10 937	7 20	10 10	3 78	9 52
1939	4 48633	3 886	6 69	3 896	8 898	2 20	3 65	3 03	5 94
1940	2 32798	1 743	4 59	1 1617	6 858	14 00	14 09	29	2 36
1941	1 16962	0 600	3 49	0 0338	5 819	10 00	8 63	2 54	16 54
1942	15 700 8	6 8 1	1 39	14 5936	3 78	4 99	2 18	1 79	12 96
1943	13 5419	4 658	7 64	1 4657	1 741	16 8	1 62	1 04	9 38
1944	11 38357	2 515	5 54	10 3378	16 386	11 79	6 17	0 29	5 81
1945	10 2521	1 371	4 44	9 10	15 347	7 18	0 72	0 54	3 23
1946	8 0668	7 572	34	7 08 1	13 308	2 77	11 15	16 41	16 4
1947	5 9 850	5 4 9	4	4 9542	11 69	14 58	4 70	15 66	12 82
1948	3 75014	3 286	6 49	8 64	9 230	9 57	15 13	14 91	9 25
1949	2 59178	143	5 39	1 6985	8 191	5 56	9 68	15 16	6 67
1950	0 4334	0 00	3 9	16 583	6 15	0 55	3 3	14 42	3 9
P r o l	16 6890	8 344	8 34	16 6876	16 684	16 8	16 88	16 62	16 75

T b t m t l I L g i t d d d t J p t O b i t t h t i f C l m m t b p p l m t d b y t h q t i f T b l XII XXXII



# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values of Mean Longitude and the Arguments at Epoch

1	2	3	4	5	6	7	8	9	10	11
Date	Mean Long.	A	B	C	D	E	F	G	H	a
	°	d	d	d	d	d	d	d	d	d
1950	325°01196	0°11	4°01	0°795	10°127	0°37566	2°057	0°48	0°607	3646°0
1951	278°46698	0°99	3°61	2°621	7°851	14°87607	15°952	5°28	12°447	4011°3
*1952	231°92199	1°87	3°22	4°447	5°575	12°68602	29°846	1°70	7°471	44°0
1953	206°94812	1°77	3°82	7°273	4°299	11°49598	44°740	7°50	3°494	410°4
1954	160°40313	0°67	3°42	9°098	2°023	9°30593	8°476	3°92	15°334	775°6
1955	113°85815	1°55	3°03	10°924	16°441	7°11589	22°371	0°34	10°357	1140°7
*1956	67°31316	0°46	2°63	0°227	14°165	4°92584	36°265	5°14	5°381	1505°6
1957	42°33928	0°36	3°23	3°053	12°889	3°73579	1°001	2°56	1°404	1871°4
1958	355°79430	1°24	2°84	4°878	10°613	1°54575	14°895	7°36	13°244	2236°0
1959	309°24931	0°14	2°44	6°704	8°337	16°04616	28°790	3°79	8°267	2600°8
*1960	262°70433	1°02	2°04	8°530	6°061	13°85611	42°684	0°21	3°291	2965°8
1961	237°73045	0°92	2°65	11°356	4°785	12°66607	7°420	6°01	16°131	3332°0
1962	191°18547	1°80	2°25	0°658	2°509	10°47602	21°314	2°43	11°154	3697°2
1963	144°64048	0°70	1°85	2°484	0°233	8°28598	35°209	7°23	6°177	4062°3
*1964	98°09550	1°59	1°46	4°310	14°651	6°09593	49°103	3°65	1°200	94°7
1965	73°12162	1°49	2°06	7°136	13°375	4°90589	13°839	1°07	14°041	460°5
1966	26°57664	0°39	1°66	8°962	11°099	2°71584	27°733	5°87	9°064	825°3
1967	340°03165	1°27	1°27	10°787	8°823	0°52580	41°628	2°29	4°087	1190°3
*1968	293°48667	0°17	0°87	0°090	6°546	15°02621	5°364	7°09	15°928	1555°0
1969	268°51279	0°07	1°47	2°916	5°270	13°83616	20°258	4°51	11°951	1921°1
1970	221°96781	0°95	1°08	4°742	2°994	11°64612	34°152	0°93	6°974	2286°3
1971	175°42282	1°83	0°68	6°567	0°718	9°45607	48°047	5°73	1°997	2651°5
*1972	128°87784	0°73	0°28	8°393	15°136	7°26602	11°783	2°15	13°837	3016°6
1973	103°90396	0°64	0°89	11°219	13°860	6°07598	26°677	7°95	9°861	3382°7
1974	57°35898	1°52	0°49	0°522	11°584	3°88593	40°571	4°37	4°884	3747°5
1975	10°81399	0°42	0°09	2°347	9°308	1°69589	4°308	0°79	16°724	4112°2
*1976	324°26901	1°30	4°21	4°173	7°032	16°19630	18°202	5°59	11°747	144°4
1977	299°29513	1°20	0°30	6°999	5°756	15°00625	33°096	3°01	7°771	510°8
1978	252°75015	0°10	4°41	8°825	3°480	12°81621	46°990	7°81	2°794	875°1
1979	206°20516	0°98	4°02	10°651	1°204	10°62616	10°727	4°23	14°634	1240°2
*1980	159°66018	1°86	3°62	12°476	15°622	8°43612	24°621	0°65	9°657	1605°6
1981	134°68630	1°77	4°22	2°779	14°346	7°24607	39°515	6°45	5°681	1972°0
1982	88°14132	0°67	3°83	4°605	12°070	5°05602	3°251	2°87	0°704	2337°3
1983	41°59033	1°55	3°43	6°431	9°794	2°86598	17°146	7°67	12°544	2702°2
*1984	355°05135	0°45	3°03	8°256	7°518	0°67593	31°040	4°09	7°567	3066°6
1985	330°07747	0°35	3°64	11°082	6°242	16°17634	45°934	1°52	3°591	3431°9
1986	283°53249	1°23	3°24	0°385	3°965	13°98630	9°670	6°32	15°431	3796°0
1987	236°98750	0°13	2°84	2°211	1°689	11°79625	23°565	2°74	10°454	4160°3
*1988	190°44252	1°01	2°45	4°036	16°108	9°60621	37°459	7°54	5°477	192°6
1989	165°46864	0°92	3°05	6°862	14°832	8°41616	2°195	4°96	1°501	558°8
1990	118°92366	1°80	2°65	8°688	12°555	6°22612	16°089	1°38	13°341	924°3
1991	72°37867	0°70	2°26	10°514	10°279	4°03607	29°984	6°18	8°364	1290°1
*1992	25°83369	1°58	1°86	12°340	8°003	1°84603	43°878	2°60	3°387	1655°8
1993	0°85981	1°48	2°46	2°642	6°727	0°65598	8°614	0°02	16°228	2022°3
1994	314°31483	0°38	2°07	4°468	4°451	15°15639	22°508	4°82	11°251	2387°4
1995	267°76984	1°26	1°67	6°294	2°175	12°96634	36°403	1°24	6°274	2752°1
*1996	221°22486	0°16	1°27	8°120	16°593	10°77630	0°139	6°04	1°297	3116°4
1997	196°25098	0°07	1°88	10°945	15°317	9°58625	15°033	3°46	14°138	3481°6
1998	149°70600	0°95	1°48	0°248	13°041	7°39621	28°927	8°26	9°161	3845°9
1999	103°16101	1°83	1°08	2°074	10°765	5°20616	42°822	4°68	4°184	4210°5
*2000	56°61603	0°73	0°69	3°900	8°489	3°01612	6°558	1°10	16°024	242°9
Periods	...	1°98	4°51	12°523	16°694	16°69046	50°158	8°38	16°817	4332°6

Constant applied to each entry in Column 2:  $-1^{\circ}00000$ .

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

IX continued Values of Mean Longitude and the Arguments at Epoch

	3	4	5	6	7	8	9		
I	J	K	L	M	N	O	P	Q	R
		<sup>a</sup>				<sup>a</sup>			<sup>a</sup>
1950	0 4334	0 000	3 9	16 583	6 15	0 55	3 23	14 42	3 09
1951	14 96408	6 01	1 19	14 1304	4 113	12 36	13 66	13 67	16 27
1952	12 8 573	4 58	7 44	12 025	2 074	7 35	7 1	12 9	12 69
1953	11 64737	915	6 34	10 8746	1 035	3 34	1 76	13 17	10 11
1954	9 48901	0 77	4 4	8 7468	15 679	15 15	1 19	12 42	6 53
1955	7 33066	6 973	14	6 6189	13 640	10 14	5 74	11 67	95
1956	5 17 30	4 829	0 04	4 4910	11 601	5 14	16 18	10 92	16 13
1957	4 01394	3 686	7 29	3 363	1 56	1 13	10 73	11 17	13 55
1958	1 85559	1 543	5 19	1 353	8 5 3	1 94	4 27	10 4	9 97
1959	16 386 4	7 744	3 09	15 7950	6 484	7 93	14 71	9 67	6 39
1960	14 789	5 601	0 99	13 6672	4 445	9	8 26	8 9	2 8
1961	13 06953	4 458	8 3	12 5393	3 406	15 73	2 81	9 17	0 24
1962	10 91117	2 315	6 14	10 4114	1 367	10 72	13 24	8 4	13 41
1963	8 75282	0 172	4 4	8 836	16 01	5 71	6 79	7 67	9 84
1964	6 59446	6 373	1 94	6 1557	13 973	0 70	0 34	6 92	6 26
1965	5 43610	5 30	0 84	5 0 78	12 934	13 51	11 77	7 17	3 68
1966	3 7775	3 086	7 08	2 9000	10 895	8 50	5 32	6 4	0 10
1967	1 11939	0 943	4 99	0 7721	8 856	3 49	15 75	5 67	13 8
*1968	15 65005	7 144	2 89	15 3318	6 817	15 30	9 30	4 92	9 70
1969	14 49169	6 001	1 79	14 040	5 778	11 29	3 85	5 17	7 12
1970	12 33333	3 858	8 03	12 0761	3 739	6 28	14 28	4 43	3 54
1971	10 17498	1 715	5 93	9 948	1 700	1 28	7 83	3 68	16 7
*1972	8 1662	7 916	3 83	7 8204	16 344	13 09	1 38	2 93	13 14
1973	6 85826	6 773	74	6 69 5	15 305	9 08	12 82	3 18	10 56
1974	4 69991	4 630	0 64	4 5646	13 266	4 07	6 36	43	6 98
1975	54155	2 486	6 88	2 4367	11 27	15 88	16 80	1 68	3 41
*1976	0 38319	0 343	4 78	0 3089	9 188	10 87	10 35	0 93	16 58
1977	15 91385	7 544	3 68	15 8686	8 149	6 86	4 90	1 18	14 00
1978	13 75550	5 401	1 59	13 7408	6 110	1 85	15 33	0 43	10 43
1979	11 59714	3 258	7 83	11 61 9	4 071	13 66	8 88	16 30	6 85
*1980	9 43878	1 115	5 73	9 4850	032	8 65	43	15 56	3 7
1981	8 2804	8 316	4 63	8 3572	0 993	4 64	13 86	15 81	0 69
1982	6 1 207	6 173	2 53	6 2293	15 638	16 45	7 41	15 06	13 87
1983	3 96371	4 03	0 44	4 1014	13 599	11 44	0 96	14 31	10 29
*1984	1 8 535	1 887	6 68	1 9735	11 559	6 43	11 39	13 56	6 71
1985	0 64700	743	5 58	0 8457	10 520	2 42	5 94	13 81	4 13
1986	15 17766	6 944	3 48	15 4054	8 481	14 23	16 37	13 06	0 55
1987	13 1930	4 801	1 38	13 2776	6 442	9 23	9 92	12 31	13 73
*1988	10 86094	2 658	7 63	11 1497	4 403	4 2	3 47	11 56	10 15
1989	9 70 59	1 515	6 53	10 0 18	3 364	0 21	14 91	11 81	7 57
1990	7 54423	7 716	4 43	7 8940	1 3 5	12 02	8 45	11 06	3 99
1991	5 38587	5 573	2 33	5 7661	15 970	7 01	2 00	10 31	0 4
1992	3 751	3 430	0 3	3 638	13 931	0	1 44	9 56	13 59
1993	6916	87	7 48	2 5103	1 89	14 81	6 99	9 81	11 01
1994	16 5998	144	5 38	0 38 5	1 853	9 80	0 54	9 06	7 44
1995	14 44146	6 345	3 8	14 94 2	8 814	4 79	10 97	8 31	3 86
1996	12 8310	4 201	1 18	12 8144	6 775	16 60	4 5	7 56	0 28
1997	11 12475	3 058	0 08	11 6865	5 736	12 59	15 95	7 81	14 45
1998	8 96639	915	6 33	9 5586	3 697	7 58	9 50	7 06	10 88
1999	6 80803	7 116	4 3	7 4307	1 658	57	3 05	6 32	7 3
2000	4 64968	4 973	2 13	5 30 9	16 302	14 38	13 48	5 57	3 72
Pe o ls	16 68902	8 344	8 34	16 6876	16 684	16 8	16 88	16 6	16 75

T btal th Tru L git d d dt J pit O bit th ti fcl m m tb ppl m t d byth q ti fT bl XII XXXII

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

**X**      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11
Day	Mean Long.	A	B	C	D	E	F	G	H	$\alpha$
	°	d	d	d	d	d	d	d	d	d
<b>Jan.</b> 1	21°57111	1'00	1'00	1'000	1'000	1'00000	1'000	1'00	1'000	1'0
2	43°14222	0'02	2'00	2'000	2'000	2'00000	2'000	2'00	2'000	2'0
3	64°71333	1'02	3'00	3'000	3'000	3'00000	3'000	3'00	3'000	3'0
4	86°28444	0'04	4'00	4'000	4'000	4'00000	4'000	4'00	4'000	4'0
5	107°85555	1'04	0'49	5'000	5'000	5'00000	5'000	5'00	5'000	5'0
6	129°42666	0'06	1'49	6'000	6'000	6'00000	6'000	6'00	6'000	6'0
7	150°99777	1'06	2'49	7'000	7'000	7'00000	7'000	7'00	7'000	7'0
8	172°56888	0'08	3'49	8'000	8'000	8'00000	8'000	8'00	8'000	8'0
9	194°13999	1'08	4'49	9'000	9'000	9'00000	9'000	0'62	9'000	9'0
10	215°71110	0'11	0'98	10'000	10'000	10'00000	10'000	1'62	10'000	10'0
11	237°28221	1'11	1'98	11'000	11'000	11'00000	11'000	2'62	11'000	11'0
12	258°85332	0'13	2'98	12'000	12'000	12'00000	12'000	3'62	12'000	12'0
13	280°42443	1'13	3'98	0'477	13'000	13'00000	13'000	4'62	13'000	13'0
14	301°99553	0'15	0'47	1'477	14'000	14'00000	14'000	5'62	14'000	14'0
15	323°56664	1'15	1'47	2'477	15'000	15'00000	15'000	6'62	15'000	15'0
16	345°13775	0'17	2'47	3'477	16'000	16'00000	16'000	7'62	16'000	16'0
17	6°70886	1'17	3'47	4'477	0'306	0'30954	17'000	0'25	0'183	17'0
18	28°27997	0'19	4'47	5'477	1'306	1'30954	18'000	1'25	1'183	18'0
19	49°85108	1'19	0'96	6'477	2'306	2'30954	19'000	2'25	2'183	19'0
20	71°42219	0'21	1'96	7'477	3'306	3'30954	20'000	3'25	3'183	20'0
21	92°99330	1'21	2'96	8'477	4'306	4'30954	21'000	4'25	4'183	21'0
22	114°56441	0'23	3'96	9'477	5'306	5'30954	22'000	5'25	5'183	22'0
23	136°13552	1'23	0'44	10'477	6'306	6'30954	23'000	6'25	6'183	23'0
24	157°70663	0'25	1'44	11'477	7'306	7'30954	24'000	7'25	7'183	24'0
25	179°27774	1'25	2'44	12'477	8'306	8'30954	25'000	8'25	8'183	25'0
26	200°84885	0'27	3'44	0'954	9'306	9'30954	26'000	0'87	9'183	26'0
27	222°41996	1'27	4'44	1'954	10'306	10'30954	27'000	1'87	10'183	27'0
28	243°99107	0'30	0'93	2'954	11'306	11'30954	28'000	2'87	11'183	28'0
29	265°56218	1'30	1'93	3'954	12'306	12'30954	29'000	3'87	12'183	29'0
30	287°13329	0'32	2'93	4'954	13'306	13'30954	30'000	4'87	13'183	30'0
<b>Feb.</b> 31	308°70440	1'32	3'93	5'954	14'306	14'30954	31'000	5'87	14'183	31'0
1	330°27551	0'34	0'42	6'954	15'306	15'30954	32'000	6'87	15'183	32'0
2	351°84662	1'34	1'42	7'954	16'306	16'30954	33'000	7'87	16'183	33'0
3	13°41773	0'36	2'42	8'954	0'611	0'61909	34'000	0'49	0'366	34'0
4	34°98884	1'36	3'42	9'954	1'611	1'61909	35'000	1'49	1'366	35'0
5	56°55995	0'38	4'42	10'954	2'611	2'61909	36'000	2'49	2'366	36'0
6	78°13106	1'38	0'91	11'954	3'611	3'61909	37'000	3'49	3'366	37'0
7	99°70217	0'40	1'91	0'430	4'611	4'61909	38'000	4'49	4'366	38'0
8	121°27328	1'40	2'91	1'430	5'611	5'61909	39'000	5'49	5'366	39'0
9	142°84439	0'42	3'91	2'430	6'611	6'61909	40'000	6'49	6'366	40'0
10	164°41549	1'42	0'40	3'430	7'611	7'61909	41'000	7'49	7'366	41'0
11	185°98660	0'44	1'40	4'430	8'611	8'61909	42'000	0'12	8'366	42'0
12	207°55771	1'44	2'40	5'430	9'611	9'61909	43'000	1'12	9'366	43'0
13	229°12882	0'46	3'40	6'430	10'611	10'61909	44'000	2'12	10'366	44'0
14	250°69993	1'46	4'40	7'430	11'611	11'61909	45'000	3'12	11'366	45'0
15	272°27104	0'49	0'89	8'430	12'611	12'61909	46'000	4'12	12'366	46'0
16	293°84215	1'49	1'89	9'430	13'611	13'61909	47'000	5'12	13'366	47'0
17	315°41326	0'51	2'89	10'430	14'611	14'61909	48'000	6'12	14'366	48'0
18	336°98437	1'51	3'89	11'430	15'611	15'61909	49'000	7'12	15'366	49'0
19	358°55548	0'53	0'38	12'430	16'611	16'61909	50'000	8'12	16'366	50'0
20	20°12659	1'53	1'38	0'907	0'917	0'92863	0'842	0'74	0'549	51'0
21	41°69770	0'55	2'38	1'907	1'917	1'92863	1'842	1'74	1'549	52'0
22	63°26881	1'55	3'38	2'907	2'917	2'92863	2'842	2'74	2'549	53'0

In Leap Year diminish the date in Columns 1, 12, by 1 day after Feb. 28.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

**X**      Motions of Mean Longitude and the Arguments for Days

		3	4	5	6	7	8	9			
Day		I	J	K	L	M	N	O	P	Q	R
Jan		y									d
	1	00	1 00 0	1 000	1 0	1 00 0	1 0 0	1 0	1 0	1 00	1 0
	2	00	00000	0 0	0	0	2 0 0	0	00	2 0	2 0
	3	0	3 000	3 000	3 0	3 0	3 000	3 0	3	3 0	3 0
	4	00	4 0	4	4 00	4 000	4 00	4 00	4 00	4 00	4 0
	5	0	5 0000	5 0	5 0	5 0000	5 000	5 0	5 0	5 00	5 0
	6	00	6 00 0	6 0 0	6 00	6 0 0	6 0 0	6 00	6 0	6 00	6 00
	7	00	7 00 00	7 0 0	7 00	7 00 0	7 00	7 0	7 0	7 0	7 0
	8	0	8 00000	8 000	8 0	8 0 0	8 0	8 0	8	8 0	8 0
	9	00	9 00 0	9 00 6	9 00	9 0000	9 00	9 0	9 0	9 0	9 0
	10	00	10 0 00	1 6 56	1 66	10 0000	10 0	10 00	1 00	1 00	10 00
	11	0	11 0 0	6 56	2 66	11 0 00	11 00	11 00	11 0	11 0	11 0
	12	00	1 00 00	3 6 56	3 66	1 0000	1 000	12 00	12 00	12 00	12 00
	13	00	13 00000	4 6 56	4 66	13 0 0	13 000	13 00	13 00	13 00	13 00
	14	00	14 000 0	5 6 56	5 66	14 0000	14 000	14 0	14 0	14 00	14 0
	15	00	15 000 0	6 6 56	6 66	15 0000	15 000	15 00	15	15 0	15 00
	16	0	16 0 000	7 6 56	7 66	16 0000	16 00	16 00	16 00	16 00	16 00
	17	0	0 31098	0 312	0 31	0 31 4	0 316	18	0 1	0 38	0 25
	18	0	1 31098	1 312	1 31	1 31 4	1 316	1 18	1 12	1 38	1 25
	19	0 1	2 31098	31	2 31	2 31 4	2 316	2 18	2 12	38	2 25
	20	0 1	3 31098	3 31	3 31	3 3124	3 316	3 18	3 12	3 38	3 25
	21	0 1	4 31098	4 312	4 31	4 31 4	4 316	4 18	4 1	4 38	4 25
	22	0 1	5 31 98	5 312	5 31	5 31 4	5 316	5 18	5 12	5 38	5 25
	23	0 1	6 31098	6 312	6 31	6 31 4	6 316	6 18	6 1	6 38	6 25
	24	0 1	7 31098	7 31	7 31	7 31 4	7 316	7 18	7 1	7 38	7 5
	25	0 1	8 31098	8 312	8 31	8 3124	8 316	8 18	8 12	8 38	8 5
	26	0 1	9 31098	9 968	9 97	9 3124	9 316	9 18	9 12	9 38	9 5
	27	0 1	10 31 98	1 968	1 97	10 3124	10 316	10 18	10 1	10 38	1 25
	28	0 1	11 31098	968	2 97	11 31 4	11 316	11 18	11 1	11 38	11 25
	29	0 1	1 31098	3 968	3 97	1 3124	12 316	12 18	12 1	1 38	12 25
	30	0 1	13 31098	4 968	4 97	13 3124	13 316	13 18	13 12	13 38	13 25
Feb	31	0 1	14 31098	5 968	5 97	14 3124	14 316	14 18	14 12	14 38	14 5
	1	0 1	15 31 98	6 968	6 97	15 31 4	15 316	15 18	15 12	15 38	15 25
	2	0 1	16 31098	7 968	7 97	16 31 4	16 316	16 18	16 12	16 38	16 25
	3	0 1	0 62197	0 6 3	0 63	0 6 47	0 633	0 36	0 3	0 75	0 49
	4	0 1	1 6 197	1 6 3	1 63	1 6247	1 633	1 36	1 3	1 75	1 49
	5	0 1	6 197	2 623	2 63	6 47	633	2 36	2 3	75	2 49
	6	0 1	3 6 197	3 623	3 63	3 6 47	3 633	3 36	3 23	3 75	3 49
	7	0 1	4 62197	4 6 3	4 63	4 6 47	4 633	4 36	4 23	4 75	4 49
	8	0 1	5 6 197	5 623	5 63	5 6 47	5 633	5 36	5 23	5 75	5 49
	9	0 1	6 62197	6 623	6 63	6 6 47	6 633	6 36	6 3	6 75	6 49
	10	0 1	7 6 197	7 623	7 63	7 6 47	7 633	7 36	7 23	7 75	7 49
	11	1	8 6 197	79	28	8 6247	8 633	8 36	8 23	8 75	8 49
	12	1	9 6 197	1 279	1 8	9 6 47	9 633	9 36	9 23	9 75	9 49
	13	0 1	10 6 197	2 79	28	10 6 47	10 633	10 36	10 23	10 75	10 49
	14	0 1	11 6 197	3 79	3 8	11 6247	11 633	11 36	11 23	11 75	11 49
	15	0 1	1 6 197	4 79	4 8	1 6247	12 633	12 36	12 3	12 75	1 49
	16	0 1	13 6 197	5 279	5 8	13 6 47	13 633	13 36	13 23	13 75	13 49
	17	0 1	14 6 197	6 79	6 28	14 6247	14 633	14 36	14 23	14 75	14 49
	18	0 1	15 6 197	7 79	7 28	15 6247	15 633	15 36	15 23	15 75	15 49
	19	0 1	16 6 197	8 79	8 28	16 6 47	16 633	16 36	16 3	0 13	16 49
	20	1	93 95	0 935	0 94	0 9371	0 949	54	0 35	1 13	0 74
	21	0 1	1 93295	1 935	1 94	1 9371	1 949	1 54	1 35	2 13	1 74
	22	0 1	93295	2 935	2 94	2 9371	949	2 54	35	3 13	74

I L p Y d i m i h t h d t i C l m by d y f t F b 8

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11
Day	Mean Long.	A	B	C	D	E	F	G	H	$\alpha$
	<sup>o</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
<b>Feb. 23</b>	84°83992	0°57	4°38	3°907	3°917	3°92863	3°842	3°74	3°549	54°0
<b>24</b>	106°41103	1°57	0°87	4°907	4°917	4°92863	4°842	4°74	4°549	55°0
<b>25</b>	127°98214	0°59	1°87	5°907	5°917	5°92863	5°842	5°74	5°549	56°0
<b>26</b>	149°55325	1°59	2°87	6°907	6°917	6°92863	6°842	6°74	6°549	57°0
<b>27</b>	171°12436	0°61	3°87	7°907	7°917	7°92863	7°842	7°74	7°549	58°0
<b>28</b>	192°69547	1°61	0°36	8°907	8°917	8°92863	8°842	0°36	8°549	59°0
<b>Mar. 1</b>	214°26658	0°63	1°36	9°907	9°917	9°92863	9°842	1°36	9°549	60°0
<b>2</b>	235°83769	1°63	2°36	10°907	10°917	10°92863	10°842	2°36	10°549	61°0
<b>3</b>	257°40880	0°65	3°36	11°907	11°917	11°92863	11°842	3°36	11°549	62°0
<b>4</b>	278°97991	1°65	4°36	0°384	12°917	12°92863	12°842	4°36	12°549	63°0
<b>5</b>	300°55102	0°67	0°85	1°384	13°917	13°92863	13°842	5°36	13°549	64°0
<b>6</b>	322°12213	1°67	1°85	2°384	14°917	14°92863	14°842	6°36	14°549	65°0
<b>7</b>	343°69324	0°70	2°85	3°384	15°917	15°92863	15°842	7°36	15°549	66°0
<b>8</b>	5°26435	1°70	3°85	4°384	0°223	0°23817	16°842	8°36	16°549	67°0
<b>9</b>	26°83545	0°72	0°33	5°384	1°223	1°23817	17°842	0°99	0°731	68°0
<b>10</b>	48°40656	1°72	1°33	6°384	2°223	2°23817	18°842	1°99	1°731	69°0
<b>11</b>	69°97767	0°74	2°33	7°384	3°223	3°23817	19°842	2°99	2°731	70°0
<b>12</b>	91°54878	1°74	3°33	8°384	4°223	4°23817	20°842	3°99	3°731	71°0
<b>13</b>	113°11989	0°76	4°33	9°384	5°223	5°23817	21°842	4°99	4°731	72°0
<b>14</b>	134°69100	1°76	0°82	10°384	6°223	6°23817	22°842	5°99	5°731	73°0
<b>15</b>	156°26211	0°78	1°82	11°384	7°223	7°23817	23°842	6°99	6°731	74°0
<b>16</b>	177°83322	1°78	2°82	12°384	8°223	8°23817	24°842	7°99	7°731	75°0
<b>17</b>	199°40433	0°80	3°82	0°861	9°223	9°23817	25°842	0°61	8°731	76°0
<b>18</b>	220°97544	1°80	0°31	1°861	10°223	10°23817	26°842	1°61	9°731	77°0
<b>19</b>	242°54655	0°82	1°31	2°861	11°223	11°23817	27°842	2°61	10°731	78°0
<b>20</b>	264°11766	1°82	2°31	3°861	12°223	12°23817	28°842	3°61	11°731	79°0
<b>21</b>	285°68877	0°84	3°31	4°861	13°223	13°23817	29°842	4°61	12°731	80°0
<b>22</b>	307°25988	1°84	4°31	5°861	14°223	14°23817	30°842	5°61	13°731	81°0
<b>23</b>	328°83099	0°86	0°80	6°861	15°223	15°23817	31°842	6°61	14°731	82°0
<b>24</b>	350°40210	1°86	1°80	7°861	16°223	16°23817	32°842	7°61	15°731	83°0
<b>25</b>	11°97321	0°89	2°80	8°861	0°528	0°54772	33°842	0°23	16°731	84°0
<b>26</b>	33°54432	1°89	3°80	9°861	1°528	1°54772	34°842	1°23	0°914	85°0
<b>27</b>	55°11543	0°91	0°29	10°861	2°528	2°54772	35°842	2°23	1°914	86°0
<b>28</b>	76°68654	1°91	1°29	11°861	3°528	3°54772	36°842	3°23	2°914	87°0
<b>29</b>	98°25765	0°93	2°29	0°337	4°528	4°54772	37°842	4°23	3°914	88°0
<b>30</b>	119°82876	1°93	3°29	1°337	5°528	5°54772	38°842	5°23	4°914	89°0
<b>31</b>	141°39987	0°95	4°29	2°337	6°528	6°54772	39°842	6°23	5°914	90°0
<b>April 1</b>	162°97098	1°95	0°78	3°337	7°528	7°54772	40°842	7°23	6°914	91°0
<b>2</b>	184°54209	0°97	1°78	4°337	8°528	8°54772	41°842	8°23	7°914	92°0
<b>3</b>	206°11320	1°97	2°78	5°337	9°528	9°54772	42°842	0°86	8°914	93°0
<b>4</b>	227°68431	0°99	3°78	6°337	10°528	10°54772	43°842	1°86	9°914	94°0
<b>5</b>	249°25541	0°01	0°27	7°337	11°528	11°54772	44°842	2°86	10°914	95°0
<b>6</b>	270°82652	1°01	1°27	8°337	12°528	12°54772	45°842	3°86	11°914	96°0
<b>7</b>	292°39763	0°03	2°27	9°337	13°528	13°54772	46°842	4°86	12°914	97°0
<b>8</b>	313°96874	1°03	3°27	10°337	14°528	14°54772	47°842	5°86	13°914	98°0
<b>9</b>	335°53985	0°05	4°27	11°337	15°528	15°54772	48°842	6°86	14°914	99°0
<b>10</b>	357°11096	1°05	0°76	12°337	16°528	16°54772	49°842	7°86	15°914	100°0
<b>11</b>	18°68207	0°08	1°76	0°814	0°834	0°85726	0°684	0°48	0°097	101°0
<b>12</b>	40°25318	1°08	2°76	1°814	1°834	1°85726	1°684	1°48	1°097	102°0
<b>13</b>	61°82429	0°10	3°76	2°814	2°834	2°85726	2°684	2°48	2°097	103°0
<b>14</b>	83°39540	1°10	0°25	3°814	3°834	3°85726	3°684	3°48	3°097	104°0
<b>15</b>	104°96651	0°12	1°25	4°814	4°834	4°85726	4°684	4°48	4°097	105°0
<b>16</b>	126°53762	1°12	2°25	5°814	5°834	5°85726	5°684	5°48	5°097	106°0

In Leap Year diminish the date in Columns 1, 12, by 1 day after Feb. 28.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

	3	4	5	6	7	8	9			
D y	I	J	K	L	M	N	O	P	Q	R
								d	d	d
<b>Feb 23</b>	0 1	3 93 95	3 935	3 94	3 9371	3 949	3 54	3 35	4 13	3 74
<b>24</b>	0 2	4 93 95	4 935	4 94	4 9371	4 949	4 54	4 35	5 13	4 74
<b>25</b>	0 2	5 93 95	5 935	5 94	5 9371	5 949	5 54	5 35	6 13	5 74
<b>26</b>	0	6 93 95	6 935	6 94	6 9371	6 949	6 54	6 35	7 13	6 74
<b>27</b>		7 93 95	7 935	7 94	7 9371	7 949	7 54	7 35	8 13	7 74
<b>28</b>	0 2	8 93 95	5 91	0 60	8 9371	8 949	8 54	8 35	9 13	8 74
<b>Mar 1</b>	0	9 93 95	1 591	1 6	9 9371	9 949	9 54	9 35	10 13	9 74
<b>2</b>	2	10 93 95	5 91	6	10 9371	10 949	1 54	1 35	11 13	10 74
<b>3</b>	0	11 93 95	3 591	3 60	11 9371	11 949	11 54	11 35	12 13	11 74
<b>4</b>	0 2	12 93295	4 591	4 6	1 9371	1 949	1 54	1 35	13 13	12 74
<b>5</b>	0 2	13 93 95	5 591	5 60	13 9371	13 949	13 54	13 35	14 13	13 74
<b>6</b>	0	14 93 95	6 591	6 60	14 9371	14 949	14 54	14 35	15 13	14 74
<b>7</b>	0	15 93 95	7 591	7 60	15 9371	15 949	15 54	15 35	16 13	15 74
<b>8</b>	0 2	0 24394	0 47	0 5	0 495	0 66	16 54	16 35	0 50	16 74
<b>9</b>	0	1 24394	1 47	1 25	1 495	1 266	0 73	0 46	1 50	0 99
<b>10</b>		2 4394	47	25	495	266	1 73	1 46	2 50	1 99
<b>11</b>	0 2	3 4394	3 47	3 25	3 2495	3 266	73	2 46	3 50	99
<b>12</b>	0 2	4 24394	4 47	4 25	4 2495	4 66	3 73	3 46	4 50	3 99
<b>13</b>	0 2	5 4394	5 47	5 25	5 495	5 66	4 73	4 46	5 50	4 99
<b>14</b>	0	6 4394	6 47	6 25	6 2495	6 266	5 73	5 46	6 50	5 99
<b>15</b>	0 2	7 24394	7 247	7 5	7 2495	7 66	6 73	6 46	7 50	6 99
<b>16</b>	0	8 4394	8 47	8 25	8 2495	8 266	7 73	7 46	8 50	7 99
<b>17</b>	0 2	9 24394	0 9 3	91	9 2495	9 266	8 73	8 46	9 5	8 99
<b>18</b>	0 2	10 24394	1 903	1 91	10 2495	10 66	9 73	9 46	10 50	9 99
<b>19</b>	0 2	11 4394	903	2 91	11 2495	11 266	10 73	10 46	11 50	10 99
<b>20</b>	0 2	12 24394	3 903	3 91	1 495	12 66	11 73	11 46	1 50	11 99
<b>21</b>	0	13 4394	4 903	4 91	13 2495	13 66	1 73	12 46	13 50	1 99
<b>22</b>	0	14 24394	5 903	5 91	14 2495	14 66	13 73	13 46	14 50	13 99
<b>23</b>	2	15 4394	6 903	6 91	15 2495	15 66	14 73	14 46	15 50	14 99
<b>24</b>	0	16 4394	7 903	7 91	16 495	16 66	15 73	15 46	16 50	15 99
<b>25</b>	0 2	0 55492	558	0 57	0 5618	0 582	16 73	16 46	0 88	0 3
<b>26</b>	0	1 5549	1 558	1 57	1 5618	1 582	0 91	0 58	1 88	1 23
<b>27</b>	0 2	2 55492	558	57	2 5618	2 58	1 91	1 58	88	2 3
<b>28</b>	0 2	3 5549	3 558	3 57	3 5618	3 582	2 91	58	3 88	3 23
<b>29</b>	0 2	4 55492	4 558	4 57	4 5618	4 582	3 91	3 58	4 88	4 23
<b>30</b>		5 5549	5 558	5 57	5 5618	5 58	4 91	4 58	5 88	5 23
<b>31</b>	0	6 55492	6 558	6 57	6 5618	6 58	5 91	5 58	6 88	6 3
<b>April 1</b>	0 2	7 55492	7 558	7 57	7 5618	7 58	6 91	6 58	7 88	7 3
<b>2</b>	0 3	8 5549	0 14	0 3	8 5618	8 58	7 91	7 58	8 88	8 23
<b>3</b>	0 3	9 5549	1 214	1 23	9 5618	9 58	8 91	8 58	9 88	9 23
<b>4</b>	0 3	10 5549	14	2 3	10 5618	10 582	9 91	9 58	1 88	10 3
<b>5</b>	0 3	11 55492	3 214	3 23	11 5618	11 582	1 91	10 58	11 88	11 23
<b>6</b>	0 3	1 5549	4 14	4 23	12 5618	1 582	11 91	11 58	1 88	12 23
<b>7</b>	3	13 5549	5 14	5 23	13 5618	13 58	1 91	12 58	13 88	13 23
<b>8</b>	0 3	14 5549	6 214	6 3	14 5618	14 58	13 91	13 58	14 88	14 23
<b>9</b>	3	15 55492	7 14	7 3	15 5618	15 582	14 91	14 58	15 88	15 3
<b>10</b>	0 3	16 5549	8 14	8 3	16 5618	16 582	15 91	15 58	0 5	16 3
<b>11</b>	0 3	86590	0 870	0 88	0 874	0 898	0 09	16 58	1 25	0 48
<b>12</b>	0 3	1 86590	1 87	1 88	1 8742	1 898	1 09	0 70	2 5	1 48
<b>13</b>	0 3	8659	2 870	88	2 8742	2 898	09	1 70	3 25	2 48
<b>14</b>	0 3	3 86590	3 870	3 88	3 874	3 898	3 09	2 70	4 5	3 48
<b>15</b>	0 3	4 8659	4 870	4 88	4 874	4 898	4 09	3 70	5 25	4 48
<b>16</b>	0 3	5 8659	5 870	5 88	5 8742	5 898	5 09	4 70	6 25	5 48

I L pY dimi l hth d t i C l m by d y ft F b 8

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

*X continued* Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11
Day	Mean Long.	A	B	C	D	E	F	G	H	$\alpha$
	°	d	d	d	d	d	d	d	d	d
<b>April 17</b>	148°10873	0°14	3°25	6°814	6°834	6°85726	6°684	6°48	6°097	107°0
<b>18</b>	169°67984	1°14	4°25	7°814	7°834	7°85726	7°684	7°48	7°097	108°0
<b>19</b>	191°25095	0°16	0°73	8°814	8°834	8°85726	8°684	0°10	8°097	109°0
<b>20</b>	212°82206	1°16	1°73	9°814	9°834	9°85726	9°684	1°10	9°097	110°0
<b>21</b>	234°39317	0°18	2°73	10°814	10°834	10°85726	10°684	2°10	10°097	111°0
<b>22</b>	255°96428	1°18	3°73	11°814	11°834	11°85726	11°684	3°10	11°097	112°0
<b>23</b>	277°53539	0°20	0°22	0°291	12°834	12°85726	12°684	4°10	12°097	113°0
<b>24</b>	299°10650	1°20	1°22	1°291	13°834	13°85726	13°684	5°10	13°097	114°0
<b>25</b>	320°67761	0°22	2°22	2°291	14°834	14°85726	14°684	6°10	14°097	115°0
<b>26</b>	342°24872	1°22	3°22	3°291	15°834	15°85726	15°684	7°10	15°097	116°0
<b>27</b>	3°81983	0°24	4°22	4°291	0°139	0°16680	16°684	8°10	16°097	117°0
<b>28</b>	25°39094	1°24	0°71	5°291	1°139	1°16680	17°684	0°73	0°280	118°0
<b>29</b>	46°96205	0°27	1°71	6°291	2°139	2°16680	18°684	1°73	1°280	119°0
<b>30</b>	68°53316	1°27	2°71	7°291	3°139	3°16680	19°684	2°73	2°280	120°0
<b>May 1</b>	90°10426	0°29	3°71	8°291	4°139	4°16680	20°684	3°73	3°280	121°0
<b>2</b>	111°67537	1°29	0°20	9°291	5°139	5°16680	21°684	4°73	4°280	122°0
<b>3</b>	133°24648	0°31	1°20	10°291	6°139	6°16680	22°684	5°73	5°280	123°0
<b>4</b>	154°81759	1°31	2°20	11°291	7°139	7°16680	23°684	6°73	6°280	124°0
<b>5</b>	176°38870	0°33	3°20	12°291	8°139	8°16680	24°684	7°73	7°280	125°0
<b>6</b>	197°95981	1°33	4°20	0°768	9°139	9°16680	25°684	0°35	8°280	126°0
<b>7</b>	219°53092	0°35	0°69	1°768	10°139	10°16680	26°684	1°35	9°280	127°0
<b>8</b>	241°10203	1°35	1°69	2°768	11°139	11°16680	27°684	2°35	10°280	128°0
<b>9</b>	262°67314	0°37	2°69	3°768	12°139	12°16680	28°684	3°35	11°280	129°0
<b>10</b>	284°24425	1°37	3°69	4°768	13°139	13°16680	29°684	4°35	12°280	130°0
<b>11</b>	305°81536	0°39	0°18	5°768	14°139	14°16680	30°684	5°35	13°280	131°0
<b>12</b>	327°38647	1°39	1°18	6°768	15°139	15°16680	31°684	6°35	14°280	132°0
<b>13</b>	348°95758	0°41	2°18	7°768	16°139	16°16680	32°684	7°35	15°280	133°0
<b>14</b>	1°52869	1°41	3°18	8°768	0°445	0°47635	33°684	8°35	16°280	134°0
<b>15</b>	32°09980	0°43	4°18	9°768	1°445	1°47635	34°684	0°97	0°463	135°0
<b>16</b>	53°67091	1°43	0°67	10°768	2°445	2°47635	35°684	1°97	1°463	136°0
<b>17</b>	75°24202	0°46	1°67	11°768	3°445	3°47635	36°684	2°97	2°463	137°0
<b>18</b>	96°81313	1°46	2°67	0°244	4°445	4°47635	37°684	3°97	3°463	138°0
<b>19</b>	118°38424	0°48	3°67	1°244	5°445	5°47635	38°684	4°97	4°463	139°0
<b>20</b>	139°95535	1°48	0°16	2°244	6°445	6°47635	39°684	5°97	5°463	140°0
<b>21</b>	161°52646	0°50	1°16	3°244	7°445	7°47635	40°684	6°97	6°463	141°0
<b>22</b>	183°09757	1°50	2°16	4°244	8°445	8°47635	41°684	7°97	7°463	142°0
<b>23</b>	204°66868	0°52	3°16	5°244	9°445	9°47635	42°684	0°59	8°463	143°0
<b>24</b>	226°23979	1°52	4°16	6°244	10°445	10°47635	43°684	1°59	9°463	144°0
<b>25</b>	247°81090	0°54	0°65	7°244	11°445	11°47635	44°684	2°59	10°463	145°0
<b>26</b>	269°38201	1°54	1°65	8°244	12°445	12°47635	45°684	3°59	11°463	146°0
<b>27</b>	290°95312	0°56	2°65	9°244	13°445	13°47635	46°684	4°59	12°463	147°0
<b>28</b>	312°52423	1°56	3°65	10°244	14°445	14°47635	47°684	5°59	13°463	148°0
<b>29</b>	334°09533	0°58	0°13	11°244	15°445	15°47635	48°684	6°59	14°463	149°0
<b>30</b>	355°66644	1°58	1°13	12°244	16°445	16°47635	49°684	7°59	15°463	150°0
<b>31</b>	17°23755	0°60	2°13	0°721	0°751	0°78589	0°526	0°22	16°463	151°0
<b>June 1</b>	38°80866	1°60	3°13	1°721	1°751	1°78589	1°526	1°22	0°646	152°0
<b>2</b>	60°37977	0°62	4°13	2°721	2°751	2°78589	2°526	2°22	1°646	153°0
<b>3</b>	81°95088	1°62	0°62	3°721	3°751	3°78589	3°526	3°22	2°646	154°0
<b>4</b>	103°52199	0°65	1°62	4°721	4°751	4°78589	4°526	4°22	3°646	155°0
<b>5</b>	125°09310	1°65	2°62	5°721	5°751	5°78589	5°526	5°22	4°646	156°0
<b>6</b>	146°66421	0°67	3°62	6°721	6°751	6°78589	6°526	6°22	5°646	157°0
<b>7</b>	168°23532	1°67	0°11	7°721	7°751	7°78589	7°526	7°22	6°646	158°0

In Leap Year diminish the date in Columns 1, 12, by 1 day after Feb. 28.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

	3	4	5	6	7	8	9			
Day	I	J	K	L	M	N	O	P	Q	R
<b>April 17</b>	03	68659	6870	688	6874	6898	609	d 570	d 7 5	d 6 48
<b>18</b>	03	78659	7870	788	7874	7898	709	67	8 5	7 48
<b>19</b>	03	886590	5 6	054	8874	8898	809	77	9 5	8 48
<b>20</b>	3	986590	15 6	154	9874	9898	909	870	10 25	9 48
<b>21</b>	03	1086590	5 6	254	108742	1898	1009	97	11 5	10 48
<b>22</b>	03	1186590	3526	354	118742	11898	1109	1070	1 25	11 48
<b>23</b>	3	186590	45 6	454	128742	1898	109	117	13 5	12 48
<b>24</b>	03	1386590	55 6	554	13874	13898	1309	170	14 5	13 48
<b>25</b>	03	148659	65 6	654	14874	14898	14 9	1370	15 25	14 48
<b>26</b>	03	158659	75 6	754	158742	15898	1509	1470	16 5	15 48
<b>27</b>	03	017689	018	020	01866	015	1609	1570	063	16 48
<b>28</b>	03	117689	118	10	11866	115	07	1670	163	073
<b>29</b>	03	17689	2182	20	1866	15	17	081	63	173
<b>30</b>	3	317689	318	30	31866	315	27	181	363	273
<b>May 1</b>	3	417689	4182	420	41866	4215	327	81	463	373
<b>2</b>	03	517689	518	520	51866	515	427	381	563	473
<b>3</b>	03	617689	618	6	61866	615	57	481	663	573
<b>4</b>	03	717689	718	7	71866	7215	67	581	763	673
<b>5</b>	03	817689	8182	820	81866	8215	727	681	863	773
<b>6</b>	03	917689	0838	085	91866	915	87	781	963	873
<b>7</b>	03	1017689	1838	185	101866	10215	97	881	1063	973
<b>8</b>	04	1117689	2838	285	111866	11215	1027	981	1163	1073
<b>9</b>	04	117689	3838	385	121866	12215	1127	1081	1263	1173
<b>10</b>	04	1317689	4838	485	131866	13215	17	1181	1363	1273
<b>11</b>	04	1417689	5838	585	141866	1415	137	1281	1463	1373
<b>12</b>	04	1517689	6838	685	151866	1515	1427	1381	1563	1473
<b>13</b>	04	1617689	7838	785	161866	1615	1527	1481	000	1573
<b>14</b>	04	048787	0493	051	04990	0531	1627	1581	100	1673
<b>15</b>	04	148787	1493	151	14990	1531	045	1681	00	97
<b>16</b>	04	48787	2493	251	24990	531	145	093	300	197
<b>17</b>	04	348787	3493	351	34990	3531	45	193	400	297
<b>18</b>	04	448787	4493	451	4499	4531	345	293	500	397
<b>19</b>	04	548787	5493	551	54990	5531	445	393	600	497
<b>20</b>	04	648787	6493	651	6499	6531	545	493	700	597
<b>21</b>	04	748787	7493	751	74990	7531	645	593	800	697
<b>22</b>	04	848787	0149	017	84990	8531	745	693	900	797
<b>23</b>	04	948787	1149	117	94990	9531	845	793	1000	897
<b>24</b>	04	148787	2149	17	104990	1531	945	893	1100	997
<b>25</b>	4	1148787	3149	317	114990	11531	1045	993	100	1097
<b>26</b>	04	148787	4149	417	124990	1531	1145	1093	130	1197
<b>27</b>	04	1348787	5149	517	134990	13531	145	1193	1400	197
<b>28</b>	04	1448787	6149	617	144990	14531	1345	193	1500	1397
<b>29</b>	04	1548787	7149	717	154990	15531	1445	1393	1600	1497
<b>30</b>	04	1648787	8149	817	164990	16531	1545	1493	038	1597
<b>31</b>	04	79885	85	08	08113	0848	1645	1593	138	
<b>June 1</b>	04	179885	185	18	18113	1848	063	004	238	122
<b>2</b>	4	279885	85	82	8113	2848	163	14	338	
<b>3</b>	4	379885	3805	38	38113	3848	263	204	438	3
<b>4</b>	04	479885	4805	482	48113	4848	363	304	538	42
<b>5</b>	04	579885	5805	58	58113	5848	463	404	638	52
<b>6</b>	4	679885	685	68	68113	6848	563	504	738	6
<b>7</b>	04	779885	785	78	78113	7848	663	604	838	72

I L p Y diml i l t l d t i O l by d y f t h b s



# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

*X continued* Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11
Day	Mean Long.	A	B	C	D	E	F	G	H	$\alpha$
	°	d	d	d	d	d	d	d	d	d
<b>June 8</b>	189°80643	0°69	1°11	8°721	8°751	8°78589	8°526	8°22	7°646	159°0
<b>9</b>	211°37754	1°69	2°11	9°721	9°751	9°78589	9°526	0°84	8°646	160°0
<b>10</b>	232°94865	0°71	3°11	10°721	10°751	10°78589	10°526	1°84	9°646	161°0
<b>11</b>	254°51976	1°71	4°11	11°721	11°751	11°78589	11°526	2°84	10°646	162°0
<b>12</b>	276°09087	0°73	0°60	0°198	12°751	12°78589	12°526	3°84	11°646	163°0
<b>13</b>	297°66198	1°73	1°60	1°198	13°751	13°78589	13°526	4°84	12°646	164°0
<b>14</b>	319°23309	0°75	2°60	2°198	14°751	14°78589	14°526	5°84	13°646	165°0
<b>15</b>	340°80420	1°75	3°60	3°198	15°751	15°78589	15°526	6°84	14°646	166°0
<b>16</b>	2°37531	0°77	0°09	4°198	0°056	0°09543	16°526	7°84	15°646	167°0
<b>17</b>	23°94642	1°77	1°09	5°198	1°056	1°09543	17°526	0°46	16°646	168°0
<b>18</b>	45°51753	0°79	2°09	6°198	2°056	2°09543	18°526	1°46	0°829	169°0
<b>19</b>	67°08864	1°79	3°09	7°198	3°056	3°09543	19°526	2°46	1°829	170°0
<b>20</b>	88°65975	0°81	4°09	8°198	4°056	4°09543	20°526	3°46	2°829	171°0
<b>21</b>	110°23086	1°81	0°58	9°198	5°056	5°09543	21°526	4°46	3°829	172°0
<b>22</b>	131°80197	0°83	1°58	10°198	6°056	6°09543	22°526	5°46	4°829	173°0
<b>23</b>	153°37308	1°83	2°58	11°198	7°056	7°09543	23°526	6°46	5°829	174°0
<b>24</b>	174°94419	0°86	3°58	12°198	8°056	8°09543	24°526	7°46	6°829	175°0
<b>25</b>	196°51529	1°86	0°07	0°675	9°056	9°09543	25°526	0°09	7°829	176°0
<b>26</b>	218°08640	0°88	1°07	1°675	10°056	10°09543	26°526	1°09	8°829	177°0
<b>27</b>	239°65751	1°88	2°07	2°675	11°056	11°09543	27°526	2°09	9°829	178°0
<b>28</b>	261°22862	0°90	3°07	3°675	12°056	12°09543	28°526	3°09	10°829	179°0
<b>29</b>	282°79973	1°90	4°07	4°675	13°056	13°09543	29°526	4°09	11°829	180°0
<b>30</b>	304°37084	0°92	0°56	5°675	14°056	14°09543	30°526	5°09	12°829	181°0
<b>July 1</b>	325°94195	1°92	1°56	6°675	15°056	15°09543	31°526	6°09	13°829	182°0
<b>2</b>	347°51306	0°94	2°56	7°675	16°056	16°09543	32°526	7°09	14°829	183°0
<b>3</b>	9°08417	1°94	3°56	8°675	0°362	0°40498	33°526	8°09	15°829	184°0
<b>4</b>	30°65528	0°96	0°05	9°675	1°362	1°40498	34°526	0°71	0°012	185°0
<b>5</b>	52°22639	1°96	1°05	10°675	2°362	2°40498	35°526	1°71	1°012	186°0
<b>6</b>	73°79750	0°98	2°05	11°675	3°362	3°40498	36°526	2°71	2°012	187°0
<b>7</b>	95°36861	0°00	3°05	0°151	4°362	4°40498	37°526	3°71	3°012	188°0
<b>8</b>	116°93972	1°00	4°05	1°151	5°362	5°40498	38°526	4°71	4°012	189°0
<b>9</b>	138°51083	0°02	0°54	2°151	6°362	6°40498	39°526	5°71	5°012	190°0
<b>10</b>	160°08194	1°02	1°54	3°151	7°362	7°40498	40°526	6°71	6°012	191°0
<b>11</b>	181°65305	0°05	2°54	4°151	8°362	8°40498	41°526	7°71	7°012	192°0
<b>12</b>	203°22416	1°05	3°54	5°151	9°362	9°40498	42°526	0°33	8°012	193°0
<b>13</b>	224°79527	0°07	0°02	6°151	10°362	10°40498	43°526	1°33	9°012	194°0
<b>14</b>	246°36638	1°07	1°02	7°151	11°362	11°40498	44°526	2°33	10°012	195°0
<b>15</b>	267°93749	0°09	2°02	8°151	12°362	12°40498	45°526	3°33	11°012	196°0
<b>16</b>	289°50860	1°09	3°02	9°151	13°362	13°40498	46°526	4°33	12°012	197°0
<b>17</b>	311°07971	0°11	4°02	10°151	14°362	14°40498	47°526	5°33	13°012	198°0
<b>18</b>	332°65082	1°11	0°51	11°151	15°362	15°40498	48°526	6°33	14°012	199°0
<b>19</b>	354°22193	0°13	1°51	12°151	16°362	16°40498	49°526	7°33	15°012	200°0
<b>20</b>	15°79304	1°13	2°51	0°628	0°668	0°71452	0°368	8°33	16°012	201°0
<b>21</b>	37°36415	0°15	3°51	1°628	1°668	1°71452	1°368	0°96	0°194	202°0
<b>22</b>	58°93525	1°15	0°00	2°628	2°668	2°71452	2°368	1°96	1°194	203°0
<b>23</b>	80°50636	0°17	1°00	3°628	3°668	3°71452	3°368	2°96	2°194	204°0
<b>24</b>	102°07747	1°17	2°00	4°628	4°668	4°71452	4°368	3°96	3°194	205°0
<b>25</b>	123°64858	0°19	3°00	5°628	5°668	5°71452	5°368	4°96	4°194	206°0
<b>26</b>	145°21969	1°19	4°00	6°628	6°668	6°71452	6°368	5°96	5°194	207°0
<b>27</b>	166°79080	0°21	0°49	7°628	7°668	7°71452	7°368	6°96	6°194	208°0
<b>28</b>	188°36191	1°21	1°49	8°628	8°668	8°71452	8°368	7°96	7°194	209°0
<b>29</b>	209°93302	0°24	2°49	9°628	9°668	9°71452	9°368	0°58	8°194	210°0

In Leap Year diminish the date in Columns 1, 12, by 1 day after Feb. 28.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

	3	4	5	6	7	8	9			
D y	I	J	K	L	M	N	O	P	Q	R
<b>June</b>	<sup>y</sup>			<sup>d</sup>			<sup>d</sup>			
8	0 4	8 79885	0 461	0 48	8 8113	8 848	7 63	7 04	9 38	8 22
9	4	9 79885	1 461	1 48	9 8113	9 848	8 63	8 04	10 38	9 22
10	0 4	10 79885	2 461	48	10 8113	1 848	9 63	9 04	11 38	1 22
11	4	11 79885	3 461	3 48	11 8113	11 848	10 63	10 04	12 38	11 2
12	4	1 79885	4 461	4 48	12 8113	1 848	11 63	11 04	13 38	12 22
13	0 4	13 79885	5 461	5 48	13 8113	13 848	1 63	1 04	14 38	13 2
14	5	14 79885	6 461	6 48	14 8113	14 848	13 63	13 04	15 38	14 22
15	0 5	15 79885	7 461	7 48	15 8113	15 848	14 63	14 04	16 38	15 22
16	0 5	10984	0 117	14	0 1237	0 164	15 63	15 04	0 75	16
17	0 5	1 1 984	1 117	1 14	1 1237	1 164	16 63	16 04	1 75	46
18	0 5	2 10984	2 117	14	2 1237	2 164	0 81	0 16	2 75	1 46
19	0 5	3 10984	3 117	3 14	3 1237	3 164	1 81	1 16	3 75	2 46
20	0 5	4 1 984	4 117	4 14	4 1 37	4 164	81	2 16	4 75	3 46
21	0 5	5 10984	5 117	5 14	5 1237	5 164	3 81	3 16	5 75	4 46
22	0 5	6 1 984	6 117	6 14	6 1 37	6 164	4 81	4 16	6 75	5 46
23	0 5	7 10984	7 117	7 14	7 1 37	7 164	5 81	5 16	7 75	6 46
24	0 5	8 10984	8 117	8 14	8 1237	8 164	6 81	6 16	8 75	7 46
25	0 5	9 10984	0 773	0 79	9 1237	9 164	7 81	7 16	9 75	8 46
26	0 5	10 10984	1 773	1 79	10 1237	10 164	8 81	8 16	10 75	9 46
27	0 5	11 10984	2 773	79	11 1 37	11 164	9 81	9 16	11 75	10 46
28	0 5	12 10984	3 773	3 79	12 1237	12 164	10 81	10 16	12 75	11 46
29	0 5	13 10984	4 773	4 79	13 1 37	13 164	11 81	11 16	13 75	12 46
30	5	14 10984	5 773	5 79	14 1237	14 164	1 81	12 16	14 75	13 46
<b>July</b>	1	15 10984	6 773	6 79	15 1237	15 164	13 81	13 16	15 75	14 46
2	0 5	16 10984	7 773	7 79	16 1 37	16 164	14 81	14 16	0 13	15 46
3	0 5	0 4 8	0 4 8	0 45	0 4361	0 480	15 81	15 16	1 13	16 46
4	5	1 4 8	1 4 8	1 45	1 4361	1 480	0 0	16 16	2 13	0 71
5	0 5	2 4 82	428	45	2 4361	2 480	1 00	0 27	3 13	1 71
6	0 5	3 4 082	3 4 8	3 45	3 4361	3 480	2 00	1 7	4 13	71
7	0 5	4 42082	4 4 8	4 45	4 4361	4 480	3 00	2 27	5 13	3 71
8	0 5	5 4 82	5 428	5 45	5 4361	5 480	4 00	3 27	6 13	4 71
9	0 5	6 4 082	6 4 8	6 45	6 4361	6 480	5 00	4 27	7 13	5 71
10	0 5	7 4 082	7 4 8	7 45	7 4361	7 480	6 00	5 7	8 13	6 71
11	0 5	8 4 082	0 084	0 11	8 4361	8 480	7 00	6 7	9 13	7 71
12	0 5	9 4 082	1 084	1 11	9 4361	9 480	8 00	7 27	10 13	8 71
13	0 5	10 42082	084	11	10 4361	10 480	9 00	8 27	11 13	9 71
14	0 5	11 4 82	3 084	3 11	11 4361	11 480	10 0	9 27	12 13	10 71
15	0 5	1 4 82	4 84	4 11	12 4361	12 480	11 0	10 7	13 13	11 71
16	5	13 42 8	5 084	5 11	13 4361	13 480	12 00	11 27	14 13	1 71
17	0 5	14 4208	6 084	6 11	14 4361	14 480	13 00	12 7	15 13	13 71
18	5	15 42 82	7 084	7 11	15 4361	15 480	14 00	13 27	16 13	14 71
19	5	16 4 8	8 084	8 11	16 4361	16 480	15 0	14 7	0 50	15 71
20	0 6	73181	0 740	0 76	0 7484	0 797	16 00	15 27	1 50	16 71
21	0 6	1 73181	1 740	1 76	1 7484	1 797	0 18	16 27	2 50	0 96
22	0 6	2 73181	740	2 76	7484	797	1 18	0 39	3 50	1 96
23	0 6	3 73181	3 740	3 76	3 7484	3 797	18	1 39	4 50	96
24	0 6	4 73181	4 74	4 76	4 7484	4 797	3 18	39	5 50	3 96
25	0 6	5 73181	5 740	5 76	5 7484	5 797	4 18	3 39	6 5	4 96
26	6	6 73181	6 740	6 76	6 7484	6 797	5 18	4 39	7 50	5 96
27	0 6	7 73181	7 740	7 76	7 7484	7 797	6 18	5 39	8 50	6 96
28	0 6	8 73181	0 396	0 4	8 7484	8 797	7 18	6 39	9 50	7 96
29	0 6	9 73181	1 396	1 4	9 7484	9 797	8 18	7 39	1 5	8 96

I L p Y d m i h t h d t i C l u m by d y f t F b 8

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11
Day	Mean Long.	A	B	C	D	E	F	G	H	$\alpha$
	°	d	d	d	d	d	d	d	d	d
<b>July 30</b>	231°50413	1°24	3°49	10°628	10°668	10°71452	10°368	1°58	9°194	211°0
<b>31</b>	253°07524	0°26	4°49	11°628	11°668	11°71452	11°368	2°58	10°194	212°0
<b>Aug. 1</b>	274°64635	1°26	0°98	0°105	12°668	12°71452	12°368	3°58	11°194	213°0
<b>2</b>	296°21746	0°28	1°98	1°105	13°668	13°71452	13°368	4°58	12°194	214°0
<b>3</b>	317°78857	1°28	2°98	2°105	14°668	14°71452	14°368	5°58	13°194	215°0
<b>4</b>	339°35968	0°30	3°98	3°105	15°668	15°71452	15°368	6°58	14°194	216°0
<b>5</b>	0°93079	1°30	0°47	4°105	16°668	0°02406	16°368	7°58	15°194	217°0
<b>6</b>	22°50190	0°32	1°47	5°105	0°973	1°02406	17°368	0°20	16°194	218°0
<b>7</b>	44°07301	1°32	2°47	6°105	1°973	2°02406	18°368	1°20	0°377	219°0
<b>8</b>	65°64412	0°34	3°47	7°105	2°973	3°02406	19°368	2°20	1°377	220°0
<b>9</b>	87°21523	1°34	4°47	8°105	3°973	4°02406	20°368	3°20	2°377	221°0
<b>10</b>	108°78634	0°36	0°96	9°105	4°973	5°02406	21°368	4°20	3°377	222°0
<b>11</b>	130°35745	1°36	1°96	10°105	5°973	6°02406	22°368	5°20	4°377	223°0
<b>12</b>	151°92856	0°38	2°96	11°105	6°973	7°02406	23°368	6°20	5°377	224°0
<b>13</b>	173°49967	1°38	3°96	12°105	7°973	8°02406	24°368	7°20	6°377	225°0
<b>14</b>	195°07078	0°40	0°45	0°582	8°973	9°02406	25°368	8°20	7°377	226°0
<b>15</b>	216°64189	1°40	1°45	1°582	9°973	10°02406	26°368	0°83	8°377	227°0
<b>16</b>	238°21300	0°43	2°45	2°582	10°973	11°02406	27°368	1°83	9°377	228°0
<b>17</b>	259°78411	1°43	3°45	3°582	11°973	12°02406	28°368	2°83	10°377	229°0
<b>18</b>	281°35521	0°45	4°45	4°582	12°973	13°02406	29°368	3°83	11°377	230°0
<b>19</b>	302°92632	1°45	0°94	5°582	13°973	14°02406	30°368	4°83	12°377	231°0
<b>20</b>	324°49743	0°47	1°94	6°582	14°973	15°02406	31°368	5°83	13°377	232°0
<b>21</b>	346°06854	1°47	2°94	7°582	15°973	16°02406	32°368	6°83	14°377	233°0
<b>22</b>	7°63965	0°49	3°94	8°582	0°279	0°33361	33°368	7°83	15°377	234°0
<b>23</b>	29°21076	1°49	0°42	9°582	1°279	1°33361	34°368	0°45	16°377	235°0
<b>24</b>	50°78187	0°51	1°42	10°582	2°279	2°33361	35°368	1°45	0°560	236°0
<b>25</b>	72°35298	1°51	2°42	11°582	3°279	3°33361	36°368	2°45	1°560	237°0
<b>26</b>	93°92409	0°53	3°42	0°058	4°279	4°33361	37°368	3°45	2°560	238°0
<b>27</b>	115°49520	1°53	4°42	1°058	5°279	5°33361	38°368	4°45	3°560	239°0
<b>28</b>	137°06631	0°55	0°91	2°058	6°279	6°33361	39°368	5°45	4°560	240°0
<b>29</b>	158°63742	1°55	1°91	3°058	7°279	7°33361	40°368	6°45	5°560	241°0
<b>30</b>	180°20853	0°57	2°91	4°058	8°279	8°33361	41°368	7°45	6°560	242°0
<b>31</b>	201°77964	1°57	3°91	5°058	9°279	9°33361	42°368	0°07	7°560	243°0
<b>Sept. 1</b>	223°35075	0°59	0°40	6°058	10°279	10°33361	43°368	1°07	8°560	244°0
<b>2</b>	244°92186	1°59	1°40	7°058	11°279	11°33361	44°368	2°07	9°560	245°0
<b>3</b>	266°49297	0°62	2°40	8°058	12°279	12°33361	45°368	3°07	10°560	246°0
<b>4</b>	288°06408	1°62	3°40	9°058	13°279	13°33361	46°368	4°07	11°560	247°0
<b>5</b>	309°63519	0°64	4°40	10°058	14°279	14°33361	47°368	5°07	12°560	248°0
<b>6</b>	331°20630	1°64	0°89	11°058	15°279	15°33361	48°368	6°07	13°560	249°0
<b>7</b>	352°77741	0°66	1°89	12°058	16°279	16°33361	49°368	7°07	14°560	250°0
<b>8</b>	14°34852	1°66	2°89	0°535	0°584	0°64315	0°211	8°07	15°560	251°0
<b>9</b>	35°91963	0°68	3°89	1°535	1°584	1°64315	1°211	0°70	16°560	252°0
<b>10</b>	57°49074	1°68	0°38	2°535	2°584	2°64315	2°211	1°70	0°743	253°0
<b>11</b>	79°06185	0°70	1°38	3°535	3°584	3°64315	3°211	2°70	1°743	254°0
<b>12</b>	100°63296	1°70	2°38	4°535	4°584	4°64315	4°211	3°70	2°743	255°0
<b>13</b>	122°20407	0°72	3°38	5°535	5°584	5°64315	5°211	4°70	3°743	256°0
<b>14</b>	143°77517	1°72	4°38	6°535	6°584	6°64315	6°211	5°70	4°743	257°0
<b>15</b>	165°34628	0°74	0°87	7°535	7°584	7°64315	7°211	6°70	5°743	258°0
<b>16</b>	186°91739	1°74	1°87	8°535	8°584	8°64315	8°211	7°70	6°743	259°0
<b>17</b>	208°48850	0°76	2°87	9°535	9°584	9°64315	9°211	0°32	7°743	260°0
<b>18</b>	230°05961	1°76	3°87	10°535	10°584	10°64315	10°211	1°32	8°743	261°0
<b>19</b>	251°63072	0°78	0°36	11°535	11°584	11°64315	11°211	2°32	9°743	262°0

In Leap Year diminish the date in Columns 1, 12, by 1 day after Feb. 28.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

	3	4	5	6	7	8	9			
Day	I	J	K	L	M	N	O	P	Q	R
<b>July 30</b>	0 6	I 73181	a 2 396	a 42	I 7484	10 797	9 18	8 39	11 5	a 9 96
<b>31</b>	6	11 73181	3 396	3 4	11 7484	11 797	10 18	9 39	1 50	10 96
<b>Aug 1</b>	0 6	I 73181	4 396	4 42	I 7484	1 797	11 18	10 39	13 5	11 96
<b>2</b>	0 6	13 73181	5 396	5 4	13 7484	13 797	1 18	11 39	14 50	12 96
<b>3</b>	6	14 73181	6 396	6 4	14 7484	14 797	13 18	12 39	15 50	13 96
<b>4</b>	0 6	15 73181	7 396	7 4	15 7484	15 797	14 18	13 39	16 50	14 96
<b>5</b>	6	04279	05	0 08	6 8	0 113	15 18	14 39	0 88	15 96
<b>6</b>	0 6	I 4 79	1 05	1 08	1 06 8	1 113	16 18	15 39	1 88	0 20
<b>7</b>	0 6	4 79	052	08	0608	113	0 36	16 39	88	1 0
<b>8</b>	0 6	3 4279	3 052	3 08	3 0608	3 113	1 36	0 51	3 88	2 0
<b>9</b>	0 6	4 04279	4 052	4 08	4 0608	4 113	2 36	1 51	4 88	3 20
<b>10</b>	0 6	5 04279	5 052	5 8	5 0608	5 113	3 36	2 51	5 88	4 20
<b>11</b>	0 6	6 4 79	6 05	6 08	6 06 8	6 113	4 36	3 51	6 88	5 20
<b>12</b>	0 6	7 4 79	7 05	7 08	7 608	7 113	5 36	4 51	7 88	6 0
<b>13</b>	0 6	8 04 79	8 052	8 08	8 0608	8 113	6 36	5 51	8 88	7 20
<b>14</b>	0 6	9 04279	0 708	0 73	9 06 8	9 113	7 36	6 51	9 88	8 20
<b>15</b>	0 6	10 04 79	1 708	1 73	10 06 8	10 113	8 36	7 51	10 88	9 2
<b>16</b>	0 6	11 04279	708	2 73	11 0608	11 113	9 36	8 51	11 88	10 20
<b>17</b>	0 6	I 04 79	3 708	3 73	12 0608	12 113	10 36	9 51	12 88	11 20
<b>18</b>	0 6	13 04279	4 708	4 73	13 608	13 113	11 36	10 51	13 88	12 20
<b>19</b>	0 6	14 04279	5 7 8	5 73	14 0608	14 113	12 36	11 51	14 88	13 20
<b>20</b>	0 6	15 04 79	6 708	6 73	15 608	15 113	13 36	12 51	15 88	14 20
<b>21</b>	0 6	16 04279	7 708	7 73	16 0608	16 113	14 36	13 51	0 25	15 0
<b>22</b>	0 6	0 35377	0 363	0 39	0 3732	0 43	15 36	14 51	1 25	16 20
<b>23</b>	0 6	I 35377	I 363	I 39	I 3732	I 43	16 36	15 51	2 25	0 45
<b>24</b>	0 6	2 35377	363	2 39	373	2 430	0 54	16 51	3 25	I 45
<b>25</b>	0 6	3 35377	3 363	3 39	3 373	3 430	I 54	0 62	4 25	45
<b>26</b>	7	4 35377	4 363	4 39	4 3732	4 430	54	I 6	5 5	3 45
<b>27</b>	0 7	5 35377	5 363	5 39	5 3732	5 430	3 54	2 6	6 25	4 45
<b>28</b>	7	6 35377	6 363	6 39	6 3732	6 430	4 54	3 62	7 25	5 45
<b>29</b>	0 7	7 35377	7 363	7 39	7 3732	7 430	5 54	4 62	8 5	6 45
<b>30</b>	0 7	8 35377	0 019	0 05	8 3732	8 430	6 54	5 6	9 25	7 45
<b>31</b>	0 7	9 35377	I 019	I 05	9 3732	9 430	7 54	6 6	10 25	8 45
<b>Sept 1</b>	0 7	I 35377	019	2 05	10 3732	10 430	8 54	7 6	11 5	9 45
<b>2</b>	7	11 35377	3 019	3 05	11 3732	11 430	9 54	8 62	12 25	10 45
<b>3</b>	0 7	I 35377	4 19	4 5	12 373	12 430	10 54	9 62	13 25	11 45
<b>4</b>	7	13 35377	5 019	5 05	13 373	13 430	11 54	10 62	14 25	12 45
<b>5</b>	0 7	14 35377	6 019	6 5	14 373	14 430	12 54	11 62	15 5	13 45
<b>6</b>	0 7	15 35377	7 019	7 05	15 3732	15 430	13 54	12 62	16 5	14 45
<b>7</b>	0 7	16 35377	8 019	8 5	16 373	16 430	14 54	13 62	0 63	15 45
<b>8</b>	7	0 66476	0 675	0 71	0 6855	0 746	15 54	14 6	I 63	16 45
<b>9</b>	0 7	I 66476	I 675	I 71	I 6855	I 746	16 54	15 62	2 63	70
<b>10</b>	0 7	2 66476	675	2 71	2 6855	746	0 72	16 6	3 63	I 7
<b>11</b>	0 7	3 66476	3 675	3 71	3 6855	3 746	I 72	0 74	4 63	2 7
<b>12</b>	7	4 66476	4 675	4 71	4 6855	4 746	2 72	I 74	5 63	3 70
<b>13</b>	0 7	5 66476	5 675	5 71	5 6855	5 746	3 7	2 74	6 63	4 70
<b>14</b>	7	6 66476	6 675	6 71	6 6855	6 746	4 72	3 74	7 63	5 70
<b>15</b>	0 7	7 66476	7 675	7 71	7 6855	7 746	5 72	4 74	8 63	6 70
<b>16</b>	0 7	8 66476	0 331	36	8 6855	8 746	6 72	5 74	9 63	7 70
<b>17</b>	0 7	9 66476	I 331	I 36	9 6855	9 746	7 7	6 74	10 63	8 70
<b>18</b>	0 7	10 66476	2 331	2 36	I 6855	10 746	8 72	7 74	11 63	9 70
<b>19</b>	0 7	11 66476	3 331	3 36	11 6855	11 746	9 72	8 74	I 63	10 7

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

*X continued*      Motions of Mean Longitude and the Arguments for Days

1	2	3	4	5	6	7	8	9	10	11
Day	Mean Long.	A	B	C	D	E	F	G	H	$\alpha$
	°	d	d	d	d	d	d	d	d	d
<b>Sept. 20</b>	273°20183	1°78	1°36	0°012	12°584	12°64315	12°211	3°32	10°743	263°0
<b>21</b>	294°77294	0°80	2°36	1°012	13°584	13°64315	13°211	4°32	11°743	264°0
<b>22</b>	316°34405	1°80	3°36	2°012	14°584	14°64315	14°211	5°32	12°743	265°0
<b>23</b>	337°91516	0°83	4°36	3°012	15°584	15°64315	15°211	6°32	13°743	266°0
<b>24</b>	359°48627	1°83	0°85	4°012	16°584	16°64315	16°211	7°32	14°743	267°0
<b>25</b>	21°05738	0°85	1°85	5°012	0°890	0°95269	17°211	8°32	15°743	268°0
<b>26</b>	42°62849	1°85	2°85	6°012	1°890	1°95269	18°211	0°94	16°743	269°0
<b>27</b>	64°19960	0°87	3°85	7°012	2°890	2°95269	19°211	1°94	0°926	270°0
<b>28</b>	85°77071	1°87	0°34	8°012	3°890	3°95269	20°211	2°94	1°926	271°0
<b>29</b>	107°34182	0°89	1°34	9°012	4°890	4°95269	21°211	3°94	2°926	272°0
<b>Oct. 30</b>	128°91293	1°89	2°34	10°012	5°890	5°95269	22°211	4°94	3°926	273°0
<b>1</b>	150°48404	0°91	3°34	11°012	6°890	6°95269	23°211	5°94	4°926	274°0
<b>2</b>	172°05515	1°91	4°34	12°012	7°890	7°95269	24°211	6°94	5°926	275°0
<b>3</b>	193°62626	0°93	0°82	0°489	8°890	8°95269	25°211	7°94	6°926	276°0
<b>4</b>	215°19737	1°93	1°82	1°489	9°890	9°95269	26°211	0°57	7°926	277°0
<b>5</b>	236°76848	0°95	2°82	2°489	10°890	10°95269	27°211	1°57	8°926	278°0
<b>6</b>	258°33959	1°95	3°82	3°489	11°890	11°95269	28°211	2°57	9°926	279°0
<b>7</b>	279°91070	0°97	0°31	4°489	12°890	12°95269	29°211	3°57	10°926	280°0
<b>8</b>	301°48181	1°97	1°31	5°489	13°890	13°95269	30°211	4°57	11°926	281°0
<b>9</b>	323°05292	0°99	2°31	6°489	14°890	14°95269	31°211	5°57	12°926	282°0
<b>10</b>	344°62403	0°02	3°31	7°489	15°890	15°95269	32°211	6°57	13°926	283°0
<b>11</b>	6°19513	1°02	4°31	8°489	0°196	0°26224	33°211	7°57	14°926	284°0
<b>12</b>	27°76624	0°04	0°80	9°489	1°196	1°26224	34°211	0°19	15°926	285°0
<b>13</b>	49°33735	1°04	1°80	10°489	2°196	2°26224	35°211	1°19	0°109	286°0
<b>14</b>	70°90846	0°06	2°80	11°489	3°196	3°26224	36°211	2°19	1°109	287°0
<b>15</b>	92°47957	1°06	3°80	12°489	4°196	4°26224	37°211	3°19	2°109	288°0
<b>16</b>	114°05068	0°08	0°29	0°965	5°196	5°26224	38°211	4°19	3°109	289°0
<b>17</b>	135°62179	1°08	1°29	1°965	6°196	6°26224	39°211	5°19	4°109	290°0
<b>18</b>	157°19290	0°10	2°29	2°965	7°196	7°26224	40°211	6°19	5°109	291°0
<b>19</b>	178°76401	1°10	3°29	3°965	8°196	8°26224	41°211	7°19	6°109	292°0
<b>20</b>	200°33512	0°12	4°29	4°965	9°196	9°26224	42°211	8°19	7°109	293°0
<b>21</b>	221°90623	1°12	0°78	5°965	10°196	10°26224	43°211	0°81	8°109	294°0
<b>22</b>	243°47734	0°14	1°78	6°965	11°196	11°26224	44°211	1°81	9°109	295°0
<b>23</b>	265°04845	1°14	2°78	7°965	12°196	12°26224	45°211	2°81	10°109	296°0
<b>24</b>	286°61956	0°16	3°78	8°965	13°196	13°26224	46°211	3°81	11°109	297°0
<b>25</b>	308°19067	1°16	0°27	9°965	14°196	14°26224	47°211	4°81	12°109	298°0
<b>26</b>	329°76178	0°18	1°27	10°965	15°196	15°26224	48°211	5°81	13°109	299°0
<b>27</b>	351°33289	1°18	2°27	11°965	16°196	16°26224	49°211	6°81	14°109	300°0
<b>28</b>	12°90400	0°21	3°27	0°442	0°501	0°57178	0°052	7°81	15°109	301°0
<b>29</b>	34°47511	1°21	4°27	1°442	1°501	1°57178	1°052	0°44	16°109	302°0
<b>30</b>	56°04622	0°23	0°76	2°442	2°501	2°57178	2°052	1°44	0°292	303°0
<b>31</b>	77°61733	1°23	1°76	3°442	3°501	3°57178	3°052	2°44	1°292	304°0
<b>Nov. 1</b>	99°18844	0°25	2°76	4°442	4°501	4°57178	4°052	3°44	2°292	305°0
<b>2</b>	120°75955	1°25	3°76	5°442	5°501	5°57178	5°052	4°44	3°292	306°0
<b>3</b>	142°33066	0°27	0°25	6°442	6°501	6°57178	6°052	5°44	4°292	307°0
<b>4</b>	163°90177	1°27	1°25	7°442	7°501	7°57178	7°052	6°44	5°292	308°0
<b>5</b>	185°47288	0°29	2°25	8°442	8°501	8°57178	8°052	7°44	6°292	309°0
<b>6</b>	207°04399	1°29	3°25	9°442	9°501	9°57178	9°052	0°06	7°292	310°0
<b>7</b>	228°61509	0°31	4°25	10°442	10°501	10°57178	10°052	1°06	8°292	311°0
<b>8</b>	250°18620	1°31	0°74	11°442	11°501	11°57178	11°052	2°06	9°292	312°0
<b>9</b>	271°75731	0°33	1°74	12°442	12°501	12°57178	12°052	3°06	10°292	313°0
<b>10</b>	293°32842	1°33	2°74	0°919	13°501	13°57178	13°052	4°06	11°292	314°0

In Leap Year diminish the date in Columns 1, 12, by 1 day after Feb. 28.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

	3	4	5	6	7	8	9			
Day	I	J	K	L	M	N	O	P	Q	R
<b>Sept 20</b>	07	12 66476	4 331	4 36	1 6855	12 746	d 107	d 974	d 13 63	11 70
<b>21</b>	07	13 66476	5 331	5 36	13 6855	13 746	117	1074	14 63	1 70
<b>22</b>	07	14 66476	6 331	6 36	14 6855	14 746	127	1174	15 63	13 70
<b>23</b>	07	15 66476	7 331	7 36	15 6855	15 746	137	1 74	00	14 70
<b>24</b>	07	16 66476	8 331	0 02	16 6855	0 63	147	1374	1 00	15 70
<b>25</b>	7	0 97574	0 987	1 0	0 9979	1 063	157	1474	0	16 7
<b>26</b>	07	1 97574	1 987	0	1 9979	2 63	1672	1574	3 0	94
<b>27</b>	07	2 97574	987	3 0	9979	3 063	090	1674	4 0	1 94
<b>28</b>	07	3 97574	3 987	4 02	3 9979	4 63	190	085	5 00	2 94
<b>29</b>	07	4 97574	4 987	5 02	4 9979	5 063	90	185	6 00	3 94
<b>Oct 30</b>	07	5 97574	5 987	6 02	5 9979	6 063	390	85	7 00	4 94
<b>1</b>	08	6 97574	6 987	7 0	6 9979	7 063	490	385	8 00	5 94
<b>2</b>	08	7 97574	7 987	8 02	7 9979	8 63	59	485	9 0	6 94
<b>3</b>	08	8 97574	0 643	0 68	8 9979	9 63	690	585	10 00	7 94
<b>4</b>	08	9 97574	1 643	1 68	9 9979	10 063	790	685	11 00	8 94
<b>5</b>	8	10 97574	643	68	10 9979	11 063	890	785	12 00	9 94
<b>6</b>	8	11 97574	3 643	3 68	11 9979	1 063	990	885	13 0	10 94
<b>7</b>	08	12 97574	4 643	4 68	1 9979	13 063	1090	985	14 0	11 94
<b>8</b>	08	13 97574	5 643	5 68	13 9979	14 063	1190	1085	15 00	12 94
<b>9</b>	08	14 97574	6 643	6 68	14 9979	15 063	1290	1185	16 00	13 94
<b>10</b>	08	15 97574	7 643	7 68	15 9979	16 063	1390	1285	0 38	14 94
<b>11</b>	08	0 8672	0 298	0 33	0 3103	0 379	149	1385	1 38	15 94
<b>12</b>	8	1 867	1 98	1 33	1 3103	1 379	1590	1485	2 38	0 19
<b>13</b>	08	2 2867	2 98	2 33	2 31 3	2 379	008	1585	3 38	1 19
<b>14</b>	08	3 867	3 98	3 33	3 31 3	3 379	108	1685	4 38	19
<b>15</b>	08	4 8672	4 98	4 33	4 3103	4 379	208	97	5 38	3 19
<b>16</b>	08	5 867	5 98	5 33	5 3103	5 379	308	197	6 38	4 19
<b>17</b>	08	6 28672	6 98	6 33	6 3103	6 379	408	297	7 38	5 19
<b>18</b>	08	7 867	7 98	7 33	7 3103	7 379	508	397	8 38	6 19
<b>19</b>	8	8 2867	8 98	8 33	8 3103	8 379	608	497	9 38	7 19
<b>20</b>	08	9 867	0 954	0 99	9 3103	9 379	7 8	597	10 38	8 19
<b>21</b>	08	10 8672	1 954	1 99	10 3103	10 379	808	697	11 38	9 19
<b>22</b>	08	11 867	2 954	2 99	11 3103	11 379	908	797	1 38	10 19
<b>23</b>	08	12 867	3 954	3 99	12 31 3	1 379	1008	897	13 38	11 19
<b>24</b>	08	13 8672	4 954	4 99	13 31 3	13 379	1108	997	14 38	1 19
<b>25</b>	08	14 2867	5 954	5 99	14 3103	14 379	1208	1 97	15 38	13 19
<b>26</b>	08	15 867	6 954	6 99	15 31 3	15 379	1308	1197	16 38	14 19
<b>27</b>	08	16 867	7 954	7 99	16 3103	16 379	1408	1 97	075	15 19
<b>28</b>	08	0 59771	0 610	0 65	0 62 7	0 695	15 8	1397	1 75	16 19
<b>29</b>	08	1 59771	1 61	1 65	1 6 7	1 695	1608	1497	75	0 44
<b>30</b>	08	2 59771	2 610	65	6227	695	0 7	1597	3 75	1 44
<b>31</b>	08	3 59771	3 610	3 65	3 6 7	3 695	1 7	009	4 75	2 44
<b>Nov 1</b>	08	4 59771	4 610	4 65	4 6 7	4 695	27	109	5 75	3 44
<b>2</b>	08	5 59771	5 61	5 65	5 6 7	5 695	3 7	09	6 75	4 44
<b>3</b>	08	6 59771	6 610	6 65	6 6 27	6 695	4 7	309	7 75	5 44
<b>4</b>	08	7 59771	7 610	7 65	7 6227	7 695	5 7	409	8 75	6 44
<b>5</b>	8	8 59771	0 66	0 30	8 62 7	8 695	6 7	509	9 75	7 44
<b>6</b>	08	9 59771	1 66	1 30	9 6 7	9 695	7 7	609	1 75	8 44
<b>7</b>	09	10 59771	266	2 30	1 6 7	10 695	8 27	7 9	11 75	9 44
<b>8</b>	09	11 59771	3 266	3 30	11 62 7	11 695	9 27	809	12 75	10 44
<b>9</b>	09	12 59771	4 266	4 30	1 6 27	1 695	10 27	909	13 75	11 44
<b>10</b>	09	13 59771	5 66	5 3	13 6 7	13 695	11 7	1009	14 75	1 44

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# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

**X continued**      **Motions of Mean Longitude and the Arguments for Days**

1	2	3	4	5	6	7	8	9	10	11
Day	Mean Long.	A	B	C	D	E	F	G	H	$\alpha$
	<sup>o</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>	<sup>d</sup>
<b>Nov. 11</b>	314.89953	0.35	3.74	1.919	14.501	14.57178	14.052	5.06	12.292	315.0
<b>12</b>	336.47064	1.35	0.23	2.919	15.501	15.57178	15.052	6.06	13.292	316.0
<b>13</b>	358.04175	0.37	1.23	3.919	16.501	16.57178	16.052	7.06	14.292	317.0
<b>14</b>	19.61286	1.37	2.23	4.919	0.807	0.88132	17.052	8.06	15.292	318.0
<b>15</b>	41.18397	0.40	3.23	5.919	1.807	1.88132	18.052	0.68	16.292	319.0
<b>16</b>	62.75508	1.40	4.23	6.919	2.807	2.88132	19.052	1.68	0.475	320.0
<b>17</b>	84.32619	0.42	0.71	7.919	3.807	3.88132	20.052	2.68	1.475	321.0
<b>18</b>	105.89730	1.42	1.71	8.919	4.807	4.88132	21.052	3.68	2.475	322.0
<b>19</b>	127.46841	0.44	2.71	9.919	5.807	5.88132	22.052	4.68	3.475	323.0
<b>20</b>	149.03952	1.44	3.71	10.919	6.807	6.88132	23.052	5.68	4.475	324.0
<b>21</b>	170.61063	0.46	0.20	11.919	7.807	7.88132	24.052	6.68	5.475	325.0
<b>22</b>	192.18174	1.46	1.20	0.396	8.807	8.88132	25.052	7.68	6.475	326.0
<b>23</b>	213.75285	0.48	2.20	1.396	9.807	9.88132	26.052	0.31	7.475	327.0
<b>24</b>	235.32396	1.48	3.20	2.396	10.807	10.88132	27.052	1.31	8.475	328.0
<b>25</b>	256.89507	0.50	4.20	3.396	11.807	11.88132	28.052	2.31	9.475	329.0
<b>26</b>	278.46618	1.50	0.69	4.396	12.807	12.88132	29.052	3.31	10.475	330.0
<b>27</b>	300.03729	0.52	1.69	5.396	13.807	13.88132	30.052	4.31	11.475	331.0
<b>28</b>	321.60840	1.52	2.69	6.396	14.807	14.88132	31.052	5.31	12.475	332.0
<b>29</b>	343.17951	0.54	3.69	7.396	15.807	15.88132	32.052	6.31	13.475	333.0
<b>30</b>	4.75062	1.54	0.18	8.396	0.113	0.19087	33.052	7.31	14.475	334.0
<b>Dec. 1</b>	26.32173	0.56	1.18	9.396	1.113	1.19087	34.052	8.31	15.475	335.0
<b>2</b>	47.89284	1.56	2.18	10.396	2.113	2.19087	35.052	0.93	16.475	336.0
<b>3</b>	69.46395	0.59	3.18	11.396	3.113	3.19087	36.052	1.93	0.657	337.0
<b>4</b>	91.03505	1.59	4.18	12.396	4.113	4.19087	37.052	2.93	1.657	338.0
<b>5</b>	112.60616	0.61	0.67	0.872	5.113	5.19087	38.052	3.93	2.657	339.0
<b>6</b>	134.17727	1.61	1.67	1.872	6.113	6.19087	39.052	4.93	3.657	340.0
<b>7</b>	155.74838	0.63	2.67	2.872	7.113	7.19087	40.052	5.93	4.657	341.0
<b>8</b>	177.31949	1.63	3.67	3.872	8.113	8.19087	41.052	6.93	5.657	342.0
<b>9</b>	198.89060	0.65	0.16	4.872	9.113	9.19087	42.052	7.93	6.657	343.0
<b>10</b>	220.46171	1.65	1.16	5.872	10.113	10.19087	43.052	0.55	7.657	344.0
<b>11</b>	242.03282	0.67	2.16	6.872	11.113	11.19087	44.052	1.55	8.657	345.0
<b>12</b>	263.60393	1.67	3.16	7.872	12.113	12.19087	45.052	2.55	9.657	346.0
<b>13</b>	285.17504	0.69	4.16	8.872	13.113	13.19087	46.052	3.55	10.657	347.0
<b>14</b>	306.74615	1.69	0.65	9.872	14.113	14.19087	47.052	4.55	11.657	348.0
<b>15</b>	328.31726	0.71	1.65	10.872	15.113	15.19087	48.052	5.55	12.657	349.0
<b>16</b>	349.88837	1.71	2.65	11.872	16.113	16.19087	49.052	6.55	13.657	350.0
<b>17</b>	11.45948	0.73	3.65	0.349	0.418	0.50041	50.052	7.55	14.657	351.0
<b>18</b>	33.03059	1.73	0.14	1.349	1.418	1.50041	0.894	0.18	15.657	352.0
<b>19</b>	54.60170	0.75	1.14	2.349	2.418	2.50041	1.894	1.18	16.657	353.0
<b>20</b>	76.17281	1.75	2.14	3.349	3.418	3.50041	2.894	2.18	0.840	354.0
<b>21</b>	97.74392	0.78	3.14	4.349	4.418	4.50041	3.894	3.18	1.840	355.0
<b>22</b>	119.31503	1.78	4.14	5.349	5.418	5.50041	4.894	4.18	2.840	356.0
<b>23</b>	140.88614	0.80	0.63	6.349	6.418	6.50041	5.894	5.18	3.840	357.0
<b>24</b>	162.45725	1.80	1.63	7.349	7.418	7.50041	6.894	6.18	4.840	358.0
<b>25</b>	184.02836	0.82	2.63	8.349	8.418	8.50041	7.894	7.18	5.840	359.0
<b>26</b>	205.59947	1.82	3.63	9.349	9.418	9.50041	8.894	8.18	6.840	360.0
<b>27</b>	227.17058	0.84	0.11	10.349	10.418	10.50041	9.894	0.80	7.840	361.0
<b>28</b>	248.74169	1.84	1.11	11.349	11.418	11.50041	10.894	1.80	8.840	362.0
<b>29</b>	270.31280	0.86	2.11	12.349	12.418	12.50041	11.894	2.80	9.840	363.0
<b>30</b>	291.88391	1.86	3.11	0.826	13.418	13.50041	12.894	3.80	10.840	364.0
<b>31</b>	313.45501	0.88	4.11	1.826	14.418	14.50041	13.894	4.80	11.840	365.0
<b>32</b>	335.02612	1.88	0.60	2.826	15.418	15.50041	14.894	5.80	12.840	366.0

In Leap Year diminish the date in Columns 1, 2, by 1 day after Feb. 28.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

X continued

Motions of Mean Longitude and the Arguments for Days

		3	4	5	6	7	8	9			
D y		I	J	K	L	M	N	O	P	Q	R
				a				a		a	
Nov	11	9	14 59771	6 66	6 30	14 6 7	14 695	12 27	11 09	15 75	13 44
	12	09	15 59771	7 66	7 30	15 6 7	15 695	13 7	1 9	13	14 44
	13	9	16 59771	8 266	8 30	16 6 7	01	14 7	13 9	1 13	15 44
	14	9	090869	09	096	935	1 1	15 7	14 9	2 13	16 44
	15	09	19 869	19	196	19350	01	16 7	15 09	3 13	0 68
	16	09	290869	29 2	96	9350	3 01	045	16 09	4 13	1 68
	17	9	390869	39	396	39350	4 1	145	0 0	5 13	2 68
	18	09	49 869	49	496	49350	5 012	45	1 0	6 13	3 68
	19	09	590869	59	596	59350	6 012	345	0	7 13	4 68
	20	09	690869	69 2	696	69350	7 1	445	3 0	8 13	5 68
	21	09	79 869	792	796	79350	8 01	545	4 0	9 13	6 68
	22	09	890869	0578	06	8935	9 01	645	5 20	10 13	7 68
	23	09	99 869	1578	16	99350	10 01	745	6 20	11 13	8 68
	24	09	190869	578	62	109350	11 01	845	7 20	1 13	9 68
	25	09	1190869	3578	36	11935	1 012	945	8 0	13 13	10 68
	26	09	190869	4578	462	19350	13 012	1045	9 20	14 13	11 68
	27	09	139 869	5578	562	139350	14 01	1145	10 20	15 13	12 68
	28	09	1490869	6578	662	149350	15 012	1245	11 20	16 13	13 68
	29	09	159 869	7578	762	159350	16 01	1345	12 0	0 50	14 68
	30	09	0 1968	0234	027	0474	0328	1445	13 20	1 50	15 68
Dec	1	09	121968	134	127	12474	138	1545	14 0	2 50	16 68
	2	09	1968	234	227	22474	2328	1645	15 20	3 50	0 93
	3	09	321968	3234	37	32474	338	063	16 20	4 50	1 93
	4	09	421968	4234	427	4474	4328	163	032	5 50	93
	5	09	5 1968	534	527	52474	5328	63	132	6 50	3 93
	6	09	621968	6234	627	62474	6328	363	3	7 50	4 93
	7	09	721968	7234	727	7474	7328	463	332	8 50	5 93
	8	09	821968	834	827	8474	838	563	43	9 50	6 93
	9	9	9 1968	0889	093	92474	9328	663	532	10 5	7 93
	10	09	10 1968	1889	193	102474	1038	763	632	11 50	8 93
	11	9	1121968	889	293	11474	11328	863	732	12 50	9 93
	12	09	1 1968	3889	393	1474	1238	963	83	13 50	10 93
	13	1	1321968	4889	493	13474	13328	1063	932	14 50	11 93
	14	10	1421968	5889	593	142474	14328	1163	1032	15 50	12 93
	15	10	15 1968	6889	693	152474	15328	1263	113	16 50	13 93
	16	10	1621968	7889	793	16474	16328	1363	13	0 88	14 93
	17	1	05366	0545	059	05598	0645	1463	1332	1 88	15 93
	18	1	153066	1545	159	15598	1645	1563	143	2 88	0 18
	19	10	253066	545	259	5598	645	1663	1532	3 88	1 18
	20	10	353066	3545	359	35598	3645	081	163	4 88	2 18
	21	1	453066	4545	459	45598	4645	181	043	5 88	3 18
	22	10	55366	5545	559	55598	5645	281	143	6 88	4 18
	23	0	653066	6545	659	65598	6645	381	43	7 88	5 18
	24	10	753066	7545	759	75598	7645	481	343	8 88	6 18
	25	10	853066	0 1	0 4	85598	8645	581	443	9 88	7 18
	26	10	953066	1 1	1 24	95598	9645	681	543	10 88	8 18
	27	10	105366	2 01	4	105598	1 645	781	643	11 88	9 18
	28	1	115366	3 01	3 4	115598	11645	881	743	1 88	10 18
	29	1	15366	4 1	4 4	15598	1 645	981	843	13 88	11 18
	30	10	1353066	5 01	5 4	135598	13645	1081	943	14 88	12 18
	31	10	145366	6 2 1	6 24	145598	14645	1181	1043	15 88	13 18
	32	10	155366	7 01	7 24	155598	15645	1 81	1143	0 5	14 18

I L p Y d i m i h t h d t i C l m by d y f t F b 8



# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

**XI**                      Motion of Mean Longitude for Fractions of a Day

1	2	1	2	1	2	1	2
Day	Mean Long.	Day	Mean Long.	Day	Mean Long.	Day	Mean Long.
d	o	d	o	d	o	d	o
0.01	0.21571	0.51	11.00127	0.0001	0.00216	0.0051	0.11001
0.02	0.43142	0.52	11.21698	2	431	52	11.1217
0.03	0.64713	0.53	11.43269	3	647	53	11.1433
0.04	0.86284	0.54	11.64840	4	863	54	11.1648
0.05	1.07856	0.55	11.86411	5	1079	55	11.1864
0.06	1.29427	0.56	12.07982	0.0006	0.01294	0.0056	0.12080
0.07	1.50998	0.57	12.29553	7	1510	57	12.296
0.08	1.72569	0.58	12.51124	8	1726	58	12.511
0.09	1.94140	0.59	12.72695	9	1941	59	12.727
0.10	2.15711	0.60	12.94267	10	2157	60	12.943
0.11	2.37282	0.61	13.15838	0.0011	0.02373	0.0061	0.13158
0.12	2.58853	0.62	13.37409	12	2589	62	13.374
0.13	2.80424	0.63	13.58980	13	2804	63	13.590
0.14	3.01996	0.64	13.80551	14	3020	64	13.806
0.15	3.23567	0.65	14.02122	15	3236	65	14.021
0.16	3.45138	0.66	14.23693	0.0016	0.03451	0.0066	0.14237
0.17	3.66709	0.67	14.45264	17	3667	67	14.453
0.18	3.88280	0.68	14.66835	18	3883	68	14.668
0.19	4.09851	0.69	14.88407	19	4099	69	14.884
0.20	4.31422	0.70	15.09978	20	4314	70	15.100
0.21	4.52993	0.71	15.31549	0.0021	0.04530	0.0071	0.15315
0.22	4.74564	0.72	15.53120	22	4746	72	15.531
0.23	4.96136	0.73	15.74691	23	4961	73	15.747
0.24	5.17707	0.74	15.96262	24	5177	74	15.963
0.25	5.39278	0.75	16.17833	25	5393	75	16.178
0.26	5.60849	0.76	16.39404	0.0026	0.05608	0.0076	0.16394
0.27	5.82420	0.77	16.60975	27	5824	77	16.610
0.28	6.03991	0.78	16.82547	28	6040	78	16.825
0.29	6.25562	0.79	17.04118	29	6256	79	17.041
0.30	6.47133	0.80	17.25689	30	6471	80	17.257
0.31	6.68704	0.81	17.47260	0.0031	0.06687	0.0081	0.17473
0.32	6.90276	0.82	17.68831	32	6903	82	17.688
0.33	7.11847	0.83	17.90402	33	7118	83	17.904
0.34	7.33418	0.84	18.11973	34	7334	84	18.120
0.35	7.54989	0.85	18.33544	35	7550	85	18.336
0.36	7.76560	0.86	18.55115	0.0036	0.07766	0.0086	0.18551
0.37	7.98131	0.87	18.76687	37	7981	87	18.767
0.38	8.19702	0.88	18.98258	38	8197	88	18.983
0.39	8.41273	0.89	19.19829	39	8413	89	19.198
0.40	8.62844	0.90	19.41400	40	8628	90	19.414
0.41	8.84415	0.91	19.62971	0.0041	0.08844	0.0091	0.19630
0.42	9.05987	0.92	19.84542	42	9060	92	19.845
0.43	9.27558	0.93	20.06113	43	9276	93	20.061
0.44	9.49129	0.94	20.27684	44	9491	94	20.277
0.45	9.70700	0.95	20.49255	45	9707	95	20.493
0.46	9.92271	0.96	20.70827	0.0046	0.09923	0.0096	0.20708
0.47	10.13842	0.97	20.92398	47	10138	97	20.924
0.48	10.35413	0.98	21.13969	48	10354	98	21.140
0.49	10.56984	0.99	21.35540	49	10570	99	21.355
0.50	10.78555	1.00	21.57111	0.0050	0.10786	0.0100	0.21571

For Arguments A—R, the fraction of a day must be added as a correction to the entries of columns 3-22 of Table X.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

XII

XIII

XIV

A	Equation	$\Delta$
<sup>d</sup> 000	000100	+20
04	107	20
08	115	19
12	12	16
16	18	15
20	134	15
024	0140	+14
28	145	11
32	149	10
36	153	08
40	155	5
044	00157	+04
48	158	+01
52	158	-01
56	157	04
60	155	6
064	000152	-09
68	148	10
72	144	11
76	139	14
80	133	15
084	00017	-16
88	10	18
92	113	19
96	105	19
100	98	18
104	000091	-18
08	84	18
12	77	18
16	70	16
20	64	14
124	000059	-13
28	54	11
32	50	09
36	47	08
40	44	05
144	00043	-03
48	42	-01
52	4	+03
56	44	05
60	46	6
164	000049	+09
68	53	11
72	58	13
76	63	14
80	69	15
184	000075	+16
88	8	18
92	89	19
96	97	19
200	00104	+19

B	Equation	$\Delta$
00	0010	+7
1	17	7
2	114	7
3	121	7
4	17	6
5	133	6
06	000138	+5
7	142	4
8	146	3
9	148	2
10	150	
11	000151	+1
2	151	-1
3	15	
4	147	3
5	144	4
16	00014	-5
7	135	5
8	130	6
9	124	6
20	118	7
21	000111	-7
2	104	7
3	97	7
4	90	7
5	83	7
26	00076	-7
7	70	6
8	65	5
9	60	5
30	56	4
31	000053	-3
2	50	2
3	49	-1
4	49	+1
5	5	
36	000051	+
7	54	3
8	57	4
9	62	5
40	67	5
41	00072	+6
2	78	7
3	85	7
4	92	7
5	99	7
46	0016	+7
7	113	7
8	120	7
9	16	6
50	0013	+6

C	Equation	$\Delta$
00	00030	-28
1	72	8
2	44	28
3	17	7
4	190	26
5	165	25
06	000141	-24
7	118	
8	97	0
9	79	18
10	6	16
11	00047	-14
2	34	12
3	3	0
4	15	7
5	9	6
16	00004	-4
7		-2
8	1	0
9	2	+
20	5	4
21	000009	+5
2	14	6
3		7
4	8	8
5	36	8
26	000044	+9
7	53	10
8	63	10
9	73	10
30	83	10
31	00093	+10
2	103	10
3	113	10
4	13	10
5	133	10
36	000143	+10
7	153	1
8	16	9
9	171	9
40	18	9
41	000189	+9
2	197	8
3	205	8
4	213	8
5	21	8
46	000228	+7
7	35	7
8	242	7
9	249	7
50	00255	+6
<sup>d</sup> 50	00055	+6
1	60	5
2	265	5
3	70	5
4	74	4
5	278	4
56	000282	+4
7	85	3
8	88	3
9	91	3
60	294	3
61	000296	+2
2	98	3
3	31	3
4	303	3
5	306	3
66	000308	+
7	311	3
8	314	3
9	317	4
70	321	4
71	000325	+4
2	329	5
3	334	5
4	339	5
5	344	6
76	000350	+6
7	356	7
8	363	7
9	370	7
80	377	8
81	000385	+8
2	393	8
3	401	8
4	409	9
5	418	9
86	0047	+9
7	436	9
8	445	10
9	455	10
90	464	1
91	000474	+10
2	484	11
3	495	11
4	55	10
5	515	10
96	0525	+10
7	535	1
8	545	10
9	554	9
100	00563	+9
106	000597	+3
7	599	+1
8	599	-1
9	597	3
110	593	5
111	000587	-7
2	579	9
3	569	12
4	556	14
5	542	15
116	000526	-18
7	507	0
8	487	21
9	465	23
120	441	25
121	000416	-26
2	390	7
3	363	28
4	335	28
5	307	9
126	000278	-9
7	50	28
8	23	27
9	196	6
130	171	25
131	000146	-24
2	13	2
3	102	0
4	83	19
5	65	17
136	000050	-14
7	37	1
8	26	10
9	17	8
140	10	6
141	00005	-4
2		2
3	1	-1
4	1	+2
5	4	4
146	000008	+5
7	13	6
8	19	7
9	26	7
150	000033	+7

C t t + ∞

C t t + ∞

Appl d C t t + ∞300

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XV

Equation of Longitude

Argument D

1	2	3	1	2	3	1	2	3	1	2	3
D	Equation	$\Delta$	D	Equation	$\Delta$	D	Equation	$\Delta$	D	Equation	$\Delta$
d 0.0	0.02200	- 78	d 5.0	0.00221	+ 24	d 10.0	0.03411	+ 64	d 15.0	0.03438	- 63
.1	2122	78	.1	246	27	.1	3474	62	.1	3374	65
.2	2044	78	.2	274	30	.2	3535	60	.2	3309	66
.3	1966	78	.3	305	33	.3	3594	58	.3	3242	68
.4	1888	77	.4	339	35	.4	3651	56	.4	3173	70
.5	1811	76	.5	375	37	.5	3706	54	.5	3103	71
0.6	0.01735	- 76	5.6	0.00413	+ 40	10.6	0.03759	+ 52	15.6	0.03032	- 72
.7	1659	76	.7	455	43	.7	3810	50	.7	2960	73
.8	1584	75	.8	498	45	.8	3858	47	.8	2887	74
.9	1509	74	.9	545	48	.9	3904	45	.9	2812	75
1.0	1436	73	6.0	593	50	11.0	3948	43	16.0	2737	76
1.1	0.01364	- 72	6.1	0.00644	+ 52	11.1	0.03989	+ 40	16.1	0.02661	- 76
.2	1293	71	.2	697	54	.2	4027	37	.2	2585	77
.3	1223	69	.3	752	56	.3	4063	35	.3	2507	78
.4	1155	68	.4	809	58	.4	4097	33	.4	2430	77
.5	1088	67	.5	868	60	.5	4128	30	.5	2352	78
1.6	0.01022	- 65	6.6	0.00929	+ 62	11.6	0.04156	+ 27	16.6	0.02274	- 78
.7	959	63	.7	992	64	.7	4181	24	.7	2196	79
.8	897	61	.8	1057	66	.8	4203	21	.8	2117	78
.9	837	59	.9	1123	67	.9	4223	18	.9	2039	78
2.0	779	57	7.0	1191	69	12.0	4239	15	17.0	1962	77
2.1	0.00723	- 55	7.1	0.01260	+ 70	12.1	0.04253	+ 13	17.1	0.01884	- 78
.2	669	53	.2	1330	71	.2	4264	10	.2	1807	77
.3	617	51	.3	1402	72	.3	4272	7	.3	1730	77
.4	567	49	.4	1475	73	.4	4277	4	.4	1654	76
.5	520	46	.5	1548	74	.5	4279	+ 1	.5	1579	75
2.6	0.00475	- 44	7.6	0.01623	+ 75	12.6	0.04278	- 2	17.6	0.01505	- 74
.7	433	41	.7	1699	76	.7	4274	5	.7	1432	73
.8	393	39	.8	1775	77	.8	4268	8	.8	1360	72
.9	355	36	.9	1852	77	.9	4258	11	.9	1289	71
3.0	321	33	8.0	1929	78	13.0	4245	14	18.0	1219	69
3.1	0.00289	- 31	8.1	0.02007	+ 78	13.1	0.04230	- 17	18.1	0.01151	- 68
.2	259	28	.2	2085	78	.2	4211	20	.2	1084	66
.3	233	25	.3	2163	78	.3	4190	23	.3	1019	65
.4	209	23	.4	2241	79	.4	4166	26	.4	955	63
.5	187	20	.5	2320	78	.5	4139	28	.5	893	61
3.6	0.00169	- 18	8.6	0.02398	+ 78	13.6	0.04110	- 31	18.6	0.00833	- 59
.7	154	14	.7	2475	77	.7	4078	34	.7	775	57
.8	142	11	.8	2553	78	.8	4043	37	.8	720	55
.9	132	9	.9	2630	77	.9	4005	39	.9	666	53
4.0	125	5	9.0	2706	76	14.0	3965	42	19.0	614	51
4.1	0.00122	- 2	9.1	0.02781	+ 75	14.1	0.03922	- 44	19.1	0.00564	- 49
.2	121	+ 1	.2	2856	75	.2	3878	46	.2	517	46
.3	123	4	.3	2930	74	.3	3830	49	.3	473	44
.4	129	7	.4	3002	73	.4	3780	51	.4	430	42
.5	137	10	.5	3074	71	.5	3728	53	.5	390	39
4.6	0.00148	+ 13	9.6	0.03144	+ 70	14.6	0.03674	- 55	19.6	0.00353	- 36
.7	162	15	.7	3213	69	.7	3618	57	.7	319	33
.8	178	18	.8	3281	67	.8	3560	59	.8	287	31
.9	198	22	.9	3347	65	.9	3500	61	.9	257	28
5.0	0.00221	+ 24	10.0	0.03411	+ 64	15.0	0.03438	- 63	20.0	0.00231	- 25

Applied Constant : +0.02200.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XVI

Equation of Longitude

Argument E

E	Equa tion	$\Delta$ o or	$\frac{1}{2} \Delta^2$	E	Equa tion	$\Delta$ o or	$\frac{1}{2} \Delta^2$	E	Equa tion	$\Delta$ o or	$\frac{1}{2} \Delta^2$	E	Equa tion	$\Delta$ o or	$\frac{1}{2} \Delta^2$
<sup>a</sup> 0 00	0 88000	+321 0	0	2 50	1 56655	+186 4	-0 5	5 00	68198	-99 9	-0 6	7 50	1 14 03	-299 7	-0
05	896 5	3 09	0	55	1 57575	181 5	0 5	05	1 67685	105 5	0 6	55	1 1700	301 5	0 2
10	91 09	32 7		60	1 5847	176 4	0 5	10	1 67143	111 1	0 5	60	1 11188	3 3	0
15	9281	3 4	0 0	65	1 59339	171	0 5	15	1 66574	116 5	0 5	65	09668	304 7	1
20	94413	3 0		70	1 6 18	166 1	0 5	20	1 65978	121 9	0 5	70	1 08141	306 1	0 1
25	96 1	319 5	-0 1	75	1 61 0	161 0	0 5	25	1 65355	1 74	0 5	75	1 066 7	307 6	0 1
0 30	97608	+318 9	-1	2 80	1 6179	+155 7	0 5	5 30	1 64704	-132 9	-0 5	7 80	1 5065	-308 9	-0 1
35	99 1	318 1	0 1	85	1 6 557	150 3	0 5	35	1 640 6	138 3	0 5	85	1 03518	309 8	1
40	1 0 789	317 2	1	90	1 63 95	145 0	0 5	40	1 63321	143 6	0 5	90	1 01967	310 7	0 1
45	1 373	316 3	1	95	1 64007	139 8	0 6	45	1 6 590	148 7	0 5	95	1 00411	311 7	1
50	1 0395	315 3	-0 1	3 00	1 64693	134 2	0 6	50	1 61834	154 0	0 5	8 00	0 98850	312 6	0 1
0 55	1 5526	+314 0	-0	3 05	1 65349	+1 84	-0 6	5 55	1 61 50	-159	0 5	8 05	0 97 85	-313	-0 1
60	1 07 9	31 5	0	10	1 65977	1 3	0 6	60	1 60 42	164	0 5	10	95718	313 8	-0 1
65	1 08651	311 0	0	15	1 66579	117 5	0 6	65	1 59410	169 1	0 5	15	94147	314 4	0 0
70	1 10 0	309 5	0	20	1 6715	111 6	0 6	70	1 58551	174	5	20	9 574	314 8	0 0
75	1 746	307 9		25	1 67695	106 0	0 6	75	1 57668	179	0 5	25	90999	315 0	0 0
0 80	1 13281	+306 0	-	3 30	1 68 1	+100 4	-0 6	5 80	1 56759	-184 0	-0 5	8 30	0 894 4	-315 1	0 0
85	1 148 6	304	0	35	1 68699	94 5	0 6	85	1 55828	188 5	0 5	35	87848	315 1	0 0
90	1 16323	30 3	0 2	40	1 69157	88 7	0 6	90	1 54874	193 3	0 5	40	86273	315 1	0
95	1 178 9	300	0 2	45	1 69586	83 0	0 6	95	1 53895	198 1	0 5	45	84699	314 8	0 0
1 00	1 193 4	98 0	0	50	1 69987	77 3	0 6	6 00	1 52893	0 6	0 4	50	831 5	314 6	0 0
1 05	1 0808	+295 7	-0	3 55	1 70359	+71 3	-0 6	6 05	1 51869	-206 9	-0 4	8 55	0 81553	-314 2	0 0
10	1 81	93 3	3	60	1 7070	65	0 6	10	1 5 824	211 4	0 4	60	79983	313 7	+0 1
15	1 3741	90 7	0 3	65	1 71011	59 4	6	15	1 49755	215 9	0 4	65	78416	313 1	0 1
20	1 5188	287 9	3	70	1 71 94	53 6	0 6	20	1 48665	220 0	4	70	7685	312 4	1
25	1 6620	85 2	0 3	75	1 71547	47 6	0 6	25	1 47555	24 0	0 4	75	75292	311 6	0 1
1 30	1 8 40	+82 4	-0 3	3 80	1 71770	-41 7	-0 6	6 30	1 464 5	-2 8	-0 4	8 80	0 73736	-310 6	+0 1
35	1 29444	279 4	0 3	85	1 71964	35 8	0 6	35	1 45 73	32 3	0 4	85	72186	309 6	0 1
40	1 3 834	76 3	3	90	1 721 8	29 7	6	40	1 44101	36 3	0 4	90	70640	3 8 6	0 1
45	1 3 07	73 0	0 3	95	1 7 261	3 5	0 6	45	1 4 910	240 0	0 4	95	69100	307	0 1
50	1 33564	69 8	0 3	4 00	1 7 363	17 6	0 6	50	1 41701	243 7	0 4	9 00	67568	305 7	0 1
1 55	1 349 5	+66 6	-0 3	4 05	1 7 437	+11 7	-0 6	6 55	1 40473	-247 7	-0 4	9 05	0 66043	-304 3	+0 1
60	1 36 30	63 1	0 4	10	1 72480	+5 7	0 6	60	1 39226	251 3	0 3	10	64525	302 8	0
65	1 37536	259 5	0 4	15	1 7 494	-0	0 6	65	1 37962	254 5	0 3	15	63015	301 1	0 2
70	1 388 5	56 0	0 4	20	1 7 478	6 2	0 6	70	1 36681	258 0	0 3	20	61514	99 4	0
75	1 4 096	5 4	0 4	25	1 7 43	12 1	0 6	75	1 3538	61 4	0 3	25	60021	297 6	2
1 80	1 41349	+48 4	-0 4	4 30	1 7 357	-18 1	-0 6	6 80	1 34067	-264 6	0 3	9 30	58538	295 6	+0 2
85	1 4 581	44 4	4	35	1 72251	4 1	6	85	1 32736	67 8	3	35	57 65	293 5	0 2
90	43793	40 5	4	40	1 7 116	3 1	0 6	90	1 31389	70 7	0 3	40	556 3	91 3	0 2
95	44986	36 5	0 4	45	1 7195	36 1	0 6	95	1 300 9	73 5	0 3	45	5415	289 0	2
2 00	1 46158	32 3	0 4	50	1 71755	4 0	0 6	7 00	1 28654	276 5	0 3	50	5 713	286 6	2
2 05	1 473 9	+2 8 1	-0 4	4 55	1 7153	-47 9	-0 6	7 05	1 27 64	-279 3	-0 3	9 55	0 51 86	-284 1	+0 3
10	1 48439	223 7	0 4	60	1 71 76	53 8	6	10	1 25861	8 0	0 3	60	4987	281 5	3
15	1 49546	19 3	4	65	1 7099	59 6	6	15	1 24444	84 7	0 3	65	48471	78 8	0 3
20	1 5 63	14 8	0 5	70	1 70680	65 4	0 6	20	1 3014	87 1	0 2	70	47084	276 0	3
25	1 51694	10 1	5	75	1 70338	71 3	0 6	25	1 1573	289 4	0 2	75	45711	273 2	0 3
2 30	1 5 733	+5 6	-5	4 80	1 69967	-77 0	-0 6	7 30	1 201	-91 7	-	9 80	0 44352	-7 3	+0 3
35	1 5375	1 0	0 5	85	1 69568	82 6	6	35	1 18656	93 8	0 2	85	43008	267	3
40	1 54743	196 1	0 5	90	1 69141	88 4	6	40	1 1718	295 9	0	90	41680	64 0	0 3
45	1 55711	191	0 5	95	1 68684	94 3	0 6	45	1 15697	97 9		95	4 368	260 8	0 3
2 50	1 56655	+186 4	-5	5 00	1 68198	-99 9	-0 6	7 50	1 14203	-299 7	-0 2	10 00	0 39072	-257 6	+0 3

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XVI continued

Equation of Longitude

Argument E

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
E	Equa- tion	$\Delta$ 0 <sup>d</sup> 0 <sup>r</sup>	$\frac{1}{2}\Delta^2$	E	Equa- tion	$\Delta$ 0 <sup>d</sup> 0 <sup>r</sup>	$\frac{1}{2}\Delta^2$	E	Equa- tion	$\Delta$ 0 <sup>d</sup> 0 <sup>r</sup>	$\frac{1}{2}\Delta^2$	E	Equa- tion	$\Delta$ 0 <sup>d</sup> 0 <sup>r</sup>	$\frac{1}{2}\Delta^2$
d	o			d	o			d	o			d	o		
10 00	0 39072	-257,5	+0,3	12 50	0 03515	-5,2	+0,6	15 00	0 37417	+256,7	+0,4	17 50	1 13573	+305,7	-0,2
05	37793	254,0	0,4	55	3504	+0,8	0,6	05	38710	260,3	0,3	55	1 15097	303,9	0,2
10	36532	250,4	0,4	60	3523	7,0	0,6	10	40020	263,7	0,3	60	1 16612	302,0	0,2
15	35289	246,9	0,4	65	3574	13,1	0,6	15	41347	267,1	0,3	65	1 18117	299,8	0,2
20	34063	243,4	0,4	70	3654	18,9	0,6	20	42691	270,4	0,3	70	1 19610	297,5	0,2
25	32855	239,6	0,4	75	3763	24,8	0,6	25	44051	273,7	0,3	75	1 21092	295,2	0,2
10 30	0 31667	-235,7	+0,4	12 80	0 03902	+30,8	+0,6	15 30	0 45428	+276,9	+0,3	17 80	1 22562	+292,6	-0,3
35	30500	231,4	0,4	85	4071	36,8	0,6	35	46820	279,9	0,3	85	1 24018	290,0	0,3
40	29353	227,2	0,4	90	4270	42,8	0,6	40	48227	283,0	0,3	90	1 25462	287,5	0,3
45	28226	223,4	0,4	95	4499	48,8	0,6	45	49650	286,0	0,3	95	1 26893	284,8	0,3
50	27119	219,2	0,4	13 00	4758	54,7	0,6	50	51087	288,7	0,3	18 00	1 28310	281,9	0,3
10 55	0 26034	-214,8	+0,4	13 05	0 05046	+60,5	+0,6	15 55	0 52537	+291,0	+0,2	18 05	1 29712	+278,8	-0,3
60	24971	210,5	0,4	10	5363	66,5	0,6	60	53998	293,4	0,2	10	1 31098	275,7	0,3
65	23929	206,1	0,5	15	5711	72,4	0,6	65	55471	295,8	0,2	15	1 32469	272,6	0,3
70	22910	201,6	0,5	20	6087	78,2	0,6	70	56956	298,3	0,2	20	1 33824	269,2	0,3
75	21913	197,0	0,5	25	6493	84,2	0,6	75	58454	300,7	0,2	25	1 35161	265,8	0,3
10 80	0 20940	-192,3	+0,5	13 30	0 06929	+89,9	+0,6	15 80	0 59963	+302,8	+0,2	18 30	1 36482	+262,5	-0,3
85	19990	187,8	0,5	35	7392	95,5	0,6	85	61482	304,7	0,2	35	1 37786	259,0	0,4
90	19062	183,1	0,5	40	7884	101,4	0,6	90	63010	306,5	0,2	40	1 39072	255,3	0,4
95	18159	178,0	0,5	45	8406	107,1	0,6	95	64547	308,2	0,2	45	1 40339	251,4	0,4
11 00	17282	173,0	0,5	50	8955	112,7	0,6	16 00	66092	309,9	0,2	50	1 41586	247,6	0,4
11 05	0 16429	-168,2	+0,5	13 55	0 09533	+118,4	+0,6	16 05	0 67646	+311,6	+0,2	18 55	1 42815	+243,9	-0,4
10	15600	163,2	0,5	60	10139	124,0	0,6	10	69208	312,9	0,1	60	1 44025	239,8	0,4
15	14797	158,0	0,5	65	10773	129,6	0,6	15	70775	314,1	0,1	65	1 45213	235,6	0,4
20	14020	152,9	0,5	70	11435	135,1	0,5	20	72349	315,4	0,1	70	1 46381	231,5	0,4
25	13268	147,8	0,5	75	12124	140,4	0,5	25	73929	316,5	0,1	75	1 47528	227,3	0,4
11 30	0 12542	-142,6	+0,5	13 80	0 12839	+145,9	+0,5	16 30	0 75514	+317,4	+0,1	18 80	1 48654	+222,8	-0,4
35	11842	137,3	0,5	85	13583	151,5	0,5	35	77103	318,2	0,1	85	1 49756	218,3	0,4
40	11169	132,0	0,5	90	14354	156,8	0,5	40	78696	319,0	0,1	90	1 50837	214,0	0,4
45	10522	126,6	0,6	95	15151	162,0	0,5	45	80294	319,7	+0,1	95	1 51896	209,5	0,5
50	09903	120,9	0,6	14 00	15974	167,2	0,5	50	81893	320,2	0,0	19 00	1 52932	204,7	0,5
11 55	0 09313	-115,3	+0,6	14 05	0 16823	+172,3	+0,5	16 55	0 83495	+320,5	0,0	19 05	1 53943	+199,9	-0,5
60	8750	109,9	0,6	10	17697	177,1	0,5	60	85098	320,7	0,0	10	1 54931	195,3	0,5
65	8214	104,4	0,6	15	18596	182,3	0,5	65	86702	320,9	0,0	15	1 55896	190,4	0,5
70	7706	98,7	0,6	20	19520	187,2	0,5	70	88307	321,0	0,0	20	1 56835	185,3	0,5
75	7227	93,1	0,6	25	20468	192,2	0,5	75	89912	320,9	0,0	25	1 57749	180,3	0,5
11 80	0 06775	-87,5	+0,6	14 30	0 21442	+197,2	+0,5	16 80	0 91516	+320,6	0,0	19 30	1 58638	+175,4	-0,5
85	6352	81,7	0,6	35	22440	201,9	0,5	85	93118	320,3	0,0	35	1 59503	170,4	0,5
90	5958	76,0	0,6	40	23461	206,5	0,5	90	94719	319,9	-0,1	40	1 60342	165,1	0,5
95	5592	70,3	0,6	45	24505	211,2	0,5	95	96317	319,4	0,1	45	1 61154	159,8	0,5
12 00	5255	64,3	0,6	50	25573	215,8	0,4	17 00	97913	318,8	0,1	50	1 61940	154,7	0,5
12 05	0 04949	-58,4	+0,6	14 55	0 26663	+220,2	+0,4	17 05	0 99505	+317,9	-0,1	19 55	1 62701	+149,4	-0,5
10	4671	52,6	0,6	60	27775	224,6	0,4	10	1 01092	317,0	0,1	60	1 63434	143,9	0,5
15	4423	46,8	0,6	65	28909	228,8	0,4	15	1 02675	316,1	0,1	65	1 64140	138,3	0,6
20	4203	40,9	0,6	70	30063	233,0	0,4	20	1 04253	314,9	0,1	70	1 64817	132,9	0,6
25	4014	34,8	0,6	75	31239	237,2	0,4	25	1 05824	313,6	0,1	75	1 65469	127,6	0,6
12 30	0 03855	-28,8	+0,6	14 80	0 32435	+241,3	+0,4	17 30	1 07389	+312,3	-0,1	19 80	1 66093	+121,9	-0,6
35	3726	22,9	0,6	85	33652	245,3	0,4	35	1 08947	310,9	0,1	85	1 66688	116,2	0,6
40	3626	17,0	0,6	90	34888	249,1	0,4	40	1 10498	309,3	0,2	90	1 67255	110,9	0,6
45	3556	11,1	0,6	95	36143	252,9	0,4	45	1 12040	307,5	0,2	95	1 67797	105,3	0,6
12 50	0 03515	-5,2	+0,6	15 00	0 37417	+256,7	+0,4	17 50	1 13573	+305,7	-0,2	20 00	1 68308	+99,1	-0,6

Applied Constant: +0° 88000.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XVII

Equations of Longitude

XVIII

F	Equation	$\Delta$ 0 1	F	Equation	$\Delta$ 1
00	00010	+13	300	0004	-10
06	108	13	306	36	09
12	115	1	312	31	08
18	1	13	318	26	08
24	130	13	324	21	08
30	137	1	330	16	07
36	00144	+11	336	00012	-06
42	15	11	342	9	05
48	157	11	348	6	04
54	163	09	354	4	03
60	168	09	360		03
66	00174	+09	366	000001	-0
72	179	08	372	0	-01
78	183	07	378	0	00
84	187	06	384	0	+01
90	190	05	390	1	03
96	00193	+05	396	000003	+03
102	196	04	402	5	04
108	198	03	408	8	05
114	199	0	414	11	6
120	20	+01	420	15	07
126	00020	00	426	000019	+07
132	200	-01	432	23	08
138	199	03	438	28	09
144	197	03	444	34	10
150	195	03	450	40	10
156	00193	-04	456	000046	+10
162	190	06	462	52	11
168	186	07	468	59	1
174	18	07	474	66	12
180	178	08	480	73	13
186	000173	-09	486	000081	+13
192	167	10	492	88	12
198	161	10	498	95	13
204	155	10	504	103	13
210	149	11	510	111	13
216	00014	-12	516	00118	+1
222	135	1	522	125	13
228	128	1	528	133	13
234	121	13	534	140	11
240	113	13	540	146	11
246	000106	-13	546	000153	+11
252	98	13	552	159	10
258	91	13	558	165	10
264	83	13	564	171	09
270	76	12	570	176	08
276	000069	-1	576	00018	+07
282	62	12	582	184	07
288	55	1	588	188	06
294	48	11	594	191	05
300	00004	-10	600	000194	+05

Appl d C t t + ∞ ∞

G	Equation	$\Delta$ 0 1	G	Equation	$\Delta$ 0 1
00	000150	+9	50	000082	-7
1	159	9	1	75	7
2	168	9	2	68	7
3	177	9	3	62	6
4	185	9	4	56	6
5	194	9	5	51	5
06	00020	+8	56	000046	-5
7	210	8	7	4	4
8	217	7	8	39	3
9	24	7	9	36	3
10	231	7	60	34	2
11	00037	+6	61	00003	-2
2	43	6	2	31	-1
3	248	5	3	31	0
4	53	5	4	31	+1
5	57	4	5	32	2
16	000261	+4	66	000034	+3
7	64	3	7	37	3
8	66	2	8	40	3
9	268	2	9	43	4
20	269	+1	70	48	5
21	000269	0	71	000053	+5
2	269	-1	2	58	6
3	268	2	3	64	6
4	266	2	4	7	7
5	264	3	5	77	7
26	000261	-4	76	000084	+8
7	257	4	7	92	8
8	53	5	8	10	8
9	248	5	9	108	9
30	243	6	80	117	9
31	000237	-6	81	000125	+9
2	231	7	2	134	9
3	224	8	3	143	9
4	216	8	4	152	9
5	209	8	5	161	9
36	000201	-8	86	000170	+9
7	193	9	7	179	9
8	184	9	8	187	9
9	176	9	9	196	9
40	167	9	90	204	8
41	000158	-9	91	00012	+8
2	149	9	2	19	7
3	14	9	3	226	7
4	131	9	4	233	7
5	12	9	5	239	6
46	000114	-9	96	000245	+6
7	105	9	7	250	5
8	97	8	8	254	4
9	89	8	9	258	4
50	000082	-7	100	000262	+4

Appl d C ta t + ∞ 5

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XIX

Equation of Longitude

Argument H

1	2	3	1	2	3	1	2	3	1	2	3
H	Equation	$\Delta_{0d \cdot 1}$	H	Equation	$\Delta_{0d \cdot 1}$	H	Equation	$\Delta_{0d \cdot 1}$	H	Equation	$\Delta_{0d \cdot 1}$
d 0'0	0'00700	+ 24	d 5'0	0'01307	- 7	d 10'0	0'00344	- 20	d 15'0	0'00301	+ 19
.1	724	24	.1	1300	8	.1	325	19	.1	320	19
.2	747	24	.2	1292	9	.2	306	19	.2	339	20
.3	771	24	.3	1283	10	.3	288	18	.3	359	20
.4	795	23	.4	1273	11	.4	270	18	.4	379	21
.5	818	23	.5	1262	11	.5	253	17	.5	400	21
0'6	0'00841	+ 23	5'6	0'01251	- 12	10'6	0'00236	- 17	15'6	0'00421	+ 21
.7	864	23	.7	1238	13	.7	220	16	.7	442	22
.8	887	23	.8	1225	14	.8	205	15	.8	464	22
.9	910	22	.9	1211	14	.9	191	14	.9	486	23
1'0	932	22	6'0	1197	15	11'0	177	13	16'0	509	23
1'1	0'00954	+ 21	6'1	0'01182	- 15	11'1	0'00164	- 13	16'1	0'00532	+ 23
.2	975	21	.2	1167	16	.2	151	12	.2	555	23
.3	996	21	.3	1150	17	.3	140	11	.3	578	23
.4	1017	20	.4	1133	18	.4	129	10	.4	601	24
.5	1037	20	.5	1115	18	.5	119	9	.5	625	24
1'6	0'01057	+ 20	6'6	0'01097	- 19	11'6	0'00110	- 8	16'6	0'00649	+ 24
.7	1077	19	.7	1078	19	.7	102	8	.7	673	24
.8	1096	19	.8	1059	20	.8	94	7	.8	696	24
.9	1114	18	.9	1039	20	.9	88	6	.9	720	24
2'0	1132	18	7'0	1019	21	12'0	82	6	17'0	743	23
2'1	0'01149	+ 17	7'1	0'00998	- 21	12'1	0'00077	- 5	17'1	0'00767	+ 24
.2	1165	16	.2	977	21	.2	73	4	.2	791	23
.3	1181	15	.3	956	22	.3	70	3	.3	814	23
.4	1196	14	.4	934	22	.4	67	2	.4	837	23
.5	1210	14	.5	912	23	.5	65	- 1	.5	860	23
2'6	0'01224	+ 13	7'6	0'00889	- 23	12'6	0'00065	0	17'6	0'00883	+ 23
.7	1237	13	.7	866	23	.7	66	+ 1	.7	906	22
.8	1250	12	.8	843	23	.8	67	2	.8	928	22
.9	1261	11	.9	820	23	.9	69	3	.9	950	22
3'0	1272	10	8'0	797	23	13'0	72	4	18'0	972	21
3'1	0'01282	+ 9	8'1	0'00774	- 24	13'1	0'00076	+ 4	18'1	0'00993	+ 21
.2	1291	9	.2	750	24	.2	80	5	.2	1014	21
.3	1299	8	.3	726	24	.3	86	6	.3	1034	20
.4	1307	7	.4	702	24	.4	92	7	.4	1054	20
.5	1313	6	.5	679	24	.5	100	8	.5	1073	19
3'6	0'01319	+ 5	8'6	0'00655	- 24	13'6	0'00108	+ 9	18'6	0'01092	+ 19
.7	1324	4	.7	631	24	.7	117	9	.7	1110	18
.8	1328	3	.8	607	23	.8	126	10	.8	1128	17
.9	1331	2	.9	584	23	.9	137	11	.9	1145	17
4'0	1333	1	9'0	561	23	14'0	148	12	19'0	1162	17
4'1	0'01334	+ 1	9'1	0'00538	- 23	14'1	0'00160	+ 13	19'1	0'01178	+ 16
.2	1335	0	.2	515	23	.2	173	14	.2	1194	15
.3	1334	- 1	.3	492	22	.3	187	14	.3	1208	14
.4	1333	2	.4	470	22	.4	201	15	.4	1222	14
.5	1331	3	.5	448	21	.5	216	16	.5	1235	13
4'6	0'01328	- 4	9'6	0'00427	- 21	14'6	0'00232	+ 16	19'6	0'01247	+ 12
.7	1324	5	.7	406	21	.7	248	17	.7	1259	11
.8	1319	6	.8	385	21	.8	265	18	.8	1270	10
.9	1313	6	.9	364	20	.9	283	18	.9	1280	10
5'0	0'01307	- 7	10'0	0'00344	- 20	15'0	0'00301	+ 19	20'0	0'01289	+ 9

Applied Constant: +0'00700.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XX

Equation of Longitude

Argument  $\alpha$

		3			3			3			3			3
	Equation	$\Delta$	$\alpha$	Equation	$\Delta$	$\alpha$	Equation	$\Delta$	$\alpha$	Equation	$\Delta$	$\alpha$	Equation	$\Delta$
<b>0</b>	003500	-50	<b>1000</b>	00279	-	<b>2000</b>	00786	+42	<b>3000</b>	00643	+19	<b>4000</b>	005087	-44
<b>20</b>	34 0	50	<b>1020</b>	276	- 1	<b>2020</b>	2871	43	<b>3020</b>	6468	18	<b>4020</b>	4999	44
<b>40</b>	3 99	50	<b>1040</b>	75	0	<b>2040</b>	957	43	<b>3040</b>	6503	17	<b>4040</b>	4910	45
<b>60</b>	3199	5	<b>1060</b>	77	+	<b>2060</b>	3 43	43	<b>3060</b>	6534	15	<b>4060</b>	4820	45
<b>80</b>	31 1	50	<b>1080</b>	8	3	<b>2080</b>	31 8	43	<b>3080</b>	6564	15	<b>4080</b>	4730	46
<b>100</b>	3 1	50	<b>1100</b>	9	5	<b>2100</b>	3 15	43	<b>3100</b>	659	13	<b>4100</b>	4637	47
<b>120</b>	002903	-49	<b>1120</b>	000301	+ 6	<b>2120</b>	0033 1	+43	<b>3120</b>	006617	+12	<b>4120</b>	004543	-47
<b>140</b>	805	49	<b>1140</b>	314	7	<b>2140</b>	3387	43	<b>3140</b>	6639	11	<b>4140</b>	4449	48
<b>160</b>	7 8	48	<b>1160</b>	330	9	<b>2160</b>	3473	43	<b>3160</b>	6659	9	<b>4160</b>	4353	48
<b>180</b>	612	48	<b>1180</b>	349	10	<b>2180</b>	3559	43	<b>3180</b>	6676	8	<b>4180</b>	4256	49
<b>200</b>	517	48	<b>1200</b>	369	11	<b>2200</b>	3646	43	<b>3200</b>	6691	7	<b>4200</b>	4159	49
<b>220</b>	0024 2	-47	<b>1220</b>	000392	+ 1	<b>2220</b>	003732	+43	<b>3220</b>	00670	+ 5	<b>4220</b>	004061	-50
<b>240</b>	23 9	46	<b>1240</b>	418	14	<b>2240</b>	3819	43	<b>3240</b>	671	4	<b>4240</b>	3961	50
<b>260</b>	2 37	46	<b>1260</b>	446	15	<b>2260</b>	3904	43	<b>3260</b>	6719	3	<b>4260</b>	3863	50
<b>280</b>	145	46	<b>1280</b>	477	16	<b>2280</b>	3990	43	<b>3280</b>	6723	+	<b>4280</b>	3763	50
<b>300</b>	2055	45	<b>1300</b>	510	17	<b>2300</b>	4076	43	<b>3300</b>	67 5	0	<b>4300</b>	3663	50
<b>320</b>	0 1967	-44	<b>1320</b>	00545	+18	<b>2320</b>	004161	+43	<b>3320</b>	006724	- 1	<b>4320</b>	003563	-50
<b>340</b>	1880	43	<b>1340</b>	582	20	<b>2340</b>	4246	42	<b>3340</b>	6720	3	<b>4340</b>	3462	50
<b>360</b>	1796	42	<b>1360</b>	6 3	1	<b>2360</b>	4330	4	<b>3360</b>	6712	5	<b>4360</b>	336	50
<b>380</b>	1713	41	<b>1380</b>	665		<b>2380</b>	4413	42	<b>3380</b>	670	6	<b>4380</b>	3262	50
<b>400</b>	1631	40	<b>1400</b>	710	23	<b>2400</b>	4496	42	<b>3400</b>	6689	7	<b>4400</b>	3163	50
<b>420</b>	00 55	-39	<b>1420</b>	000756	+ 4	<b>2420</b>	004579	+41	<b>3420</b>	006673	- 9	<b>4420</b>	003063	-50
<b>440</b>	1474	38	<b>1440</b>	805	25	<b>2440</b>	4660	41	<b>3440</b>	6655	10	<b>4440</b>	2965	49
<b>460</b>	1398	38	<b>1460</b>	854	25	<b>2460</b>	4741	40	<b>3460</b>	6634	11	<b>4460</b>	2867	49
<b>480</b>	13 4	37	<b>1480</b>	906	27	<b>2480</b>	4821	40	<b>3480</b>	6610	13	<b>4480</b>	2769	49
<b>500</b>	1 52	36	<b>1500</b>	96	8	<b>2500</b>	490	40	<b>3500</b>	6583	14	<b>4500</b>	2673	48
<b>520</b>	001182	-34	<b>1520</b>	001019	+29	<b>2520</b>	004979	+39	<b>3520</b>	006554	-15	<b>4520</b>	00 576	-48
<b>540</b>	1115	33	<b>1540</b>	1077	30	<b>2540</b>	5057	39	<b>3540</b>	6522	17	<b>4540</b>	2481	47
<b>560</b>	1 5	3	<b>1560</b>	1137	3	<b>2560</b>	5133	38	<b>3560</b>	6486	18	<b>4560</b>	2387	47
<b>580</b>	988	31	<b>1580</b>	1198	31	<b>2580</b>	5208	37	<b>3580</b>	6449	20	<b>4580</b>	2294	46
<b>600</b>	928	30	<b>1600</b>	1 6	3	<b>2600</b>	5 8	37	<b>3600</b>	6408	21	<b>4600</b>	2202	46
<b>620</b>	00 87	-28	<b>1620</b>	0013 6	+33	<b>2620</b>	005355	+36	<b>3620</b>	006364	-23	<b>4620</b>	002111	-45
<b>640</b>	815	7	<b>1640</b>	1393	34	<b>2640</b>	5426	35	<b>3640</b>	6318	24	<b>4640</b>	2023	44
<b>660</b>	76	6	<b>1660</b>	1460	34	<b>2660</b>	5496	35	<b>3660</b>	6270	5	<b>4660</b>	1935	44
<b>680</b>	71	25	<b>1680</b>	15 9	35	<b>2680</b>	5566	34	<b>3680</b>	6 19	6	<b>4680</b>	1849	43
<b>700</b>	664	24	<b>1700</b>	1600	36	<b>2700</b>	563	33	<b>3700</b>	6165	27	<b>4700</b>	1764	42
<b>720</b>	000619	-	<b>1720</b>	001671	+36	<b>2720</b>	005698	+33	<b>3720</b>	006108	- 9	<b>4720</b>	001681	-41
<b>740</b>	577	0	<b>1740</b>	1745	37	<b>2740</b>	5763	32	<b>3740</b>	6050	30	<b>4740</b>	1601	40
<b>760</b>	538	19	<b>1760</b>	1819	38	<b>2760</b>	5826	31	<b>3760</b>	5989	31	<b>4760</b>	1521	39
<b>780</b>	501	18	<b>1780</b>	1895	38	<b>2780</b>	5887	30	<b>3780</b>	59 6	32	<b>4780</b>	1444	38
<b>800</b>	465	17	<b>1800</b>	197	39	<b>2800</b>	5945	29	<b>3800</b>	5860	34	<b>4800</b>	1370	37
<b>820</b>	000435	-15	<b>1820</b>	002 49	+39	<b>2820</b>	006003	+29	<b>3820</b>	005791	-35	<b>4820</b>	001297	-36
<b>840</b>	407	14	<b>1840</b>	21 8	40	<b>2840</b>	6 59	27	<b>3840</b>	5722	35	<b>4840</b>	1226	35
<b>860</b>	381	1	<b>1860</b>	2 08	4	<b>2860</b>	6112	6	<b>3860</b>	5650	37	<b>4860</b>	1157	34
<b>880</b>	359	11	<b>1880</b>	88	41	<b>2880</b>	6163	26	<b>3880</b>	5575	38	<b>4880</b>	1090	33
<b>900</b>	338	1	<b>1900</b>	2370	41	<b>2900</b>	6214	5	<b>3900</b>	5498	39	<b>4900</b>	1027	31
<b>920</b>	0003 1	- 8	<b>1920</b>	002452	+41	<b>2920</b>	006262	+23	<b>3920</b>	005420	-4	<b>4920</b>	000966	- 3
<b>940</b>	306	7	<b>1940</b>	2535	4	<b>2940</b>	6307	22	<b>3940</b>	5339	41	<b>4940</b>	906	29
<b>960</b>	94	5	<b>1960</b>	618	4	<b>2960</b>	6351	21	<b>3960</b>	5256	42	<b>4960</b>	849	8
<b>980</b>	85	4	<b>1980</b>	270	42	<b>2980</b>	6392	0	<b>3980</b>	5173	42	<b>4980</b>	795	27
<b>1000</b>	00279	-	<b>2000</b>	002786	+4	<b>3000</b>	006432	+19	<b>4000</b>	005087	-44	<b>5000</b>	000743	-25



# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XXI

Equation of Longitude

Argument I

1	2	3	1	2	3	1	2	3
I	Equation	$\Delta$	I	Equation	$\Delta$	I	Equation	$\Delta$
y	°		y	°		y	°	
1850°0	0°00532	- 1	1900°0	0°00567	+ 2	1950°0	0°00641	- 7
1°0	531	- 1	1°0	569	2	1°0	635	6
2°0	530	+ 1	2°0	570	2	2°0	629	7
3°0	532	2	3°0	572	2	3°0	622	7
4°0	534	2	4°0	574	3	4°0	615	7
5°0	536	2	5°0	578	4	5°0	608	7
1856°0	0°00538	+ 2	1906°0	0°00581	+ 3	1956°0	0°00602	- 7
7°0	539	2	7°0	584	4	7°0	595	7
8°0	541	2	8°0	588	4	8°0	589	7
9°0	543	3	9°0	592	4	9°0	582	6
1860°0	546	3	1910°0	596	5	1960°0	577	6
1861°0	0°00549	+ 3	1911°0	0°00601	+ 5	1961°0	0°00570	- 6
2°0	551	2	2°0	606	5	2°0	565	5
3°0	553	3	3°0	610	5	3°0	560	5
4°0	556	3	4°0	616	7	4°0	555	5
5°0	559	3	5°0	623	6	5°0	550	5
1866°0	0°00562	+ 3	1916°0	0°00628	+ 6	1966°0	0°00545	- 4
7°0	564	2	7°0	635	6	7°0	542	4
8°0	566	2	8°0	640	5	8°0	538	3
9°0	568	2	9°0	645	5	9°0	536	3
1870°0	570	2	1920°0	650	5	1970°0	532	3
1871°0	0°00572	+ 2	1921°0	0°00656	+ 6	1971°0	0°00530	- 3
2°0	574	2	2°0	662	6	2°0	527	2
3°0	576	2	3°0	667	4	3°0	526	1
4°0	577	+ 1	4°0	670	4	4°0	526	1
5°0	577	0	5°0	675	5	5°0	524	1
1876°0	0°00577	- 1	1926°0	0°00680	+ 5	1976°0	0°00524	- 2
7°0	576	0	7°0	684	4	7°0	521	3
8°0	577	+ 1	8°0	688	4	8°0	519	- 1
9°0	577	0	9°0	691	3	9°0	519	0
1880°0	577	- 1	1930°0	694	3	1980°0	519	+ 1
1881°0	0°00576	- 1	1931°0	0°00697	+ 2	1981°0	0°00520	0
2°0	576	1	2°0	698	1	2°0	519	- 1
3°0	575	2	3°0	699	+ 1	3°0	518	0
4°0	573	1	4°0	699	0	4°0	519	+ 1
5°0	573	1	5°0	699	- 1	5°0	520	+ 1
1886°0	0°00572	- 1	1936°0	0°00698	- 1	1986°0	0°00520	- 1
7°0	571	1	7°0	697	1	7°0	519	1
8°0	571	1	8°0	696	2	8°0	518	1
9°0	570	2	9°0	694	3	9°0	518	1
1890°0	568	2	1940°0	691	3	1990°0	517	1
1891°0	0°00567	- 1	1941°0	0°00688	- 4	1991°0	0°00517	- 1
2°0	566	1	2°0	684	5	2°0	516	1
3°0	565	- 1	3°0	679	5	3°0	515	1
4°0	564	0	4°0	675	4	4°0	514	1
5°0	565	+ 1	5°0	672	4	5°0	512	2
1896°0	0°00565	- 1	1946°0	0°00667	- 6	1996°0	0°00510	- 3
7°0	564	+ 1	7°0	660	7	7°0	507	3
8°0	566	1	8°0	654	6	8°0	505	3
9°0	566	1	9°0	648	7	9°0	502	4
1900°0	0°00567	+ 2	1950°0	0°00641	- 7	2000°0	0°00498	- 4

Applied Constant: +0°00700.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XXII

Equation of Longitude

Argument J

J	Equation	$\Delta$ o d o	J	Equation	$\Delta$ o o	J	Equation	$\Delta$ o o r	J	Equation	$\Delta$ o o r
0 00	o 3300	- 23 5	2 50	o o o 333	+ 7	5 00	o o 5120	+ 19 1	7 50	o 515	- 19 0
05	3182	3 5	55	371	8	05	5214	18 5	55	5 56	19 5
10	3 65	3 4	60	413	8 8	10	53 5	18 0	60	4957	19 9
15	948	3	65	459	9 6	15	5394	17 4	65	4857	20 3
20	833	3	70	5 9	4	20	5479	16 8	70	4754	20 7
25	716	3	75	563	11 3	25	5562	16	75	4650	1 1
0 30	601	- 8	2 80	o o 6	+ 1 1	5 30	o o 5641	+ 15 4	7 80	o o 4543	- 21 6
35	2488	2 6	85	684	1 8	35	5716	14 8	85	4434	21 9
40	2375	6	90	75	13 4	40	5789	14	90	4324	2 1
45	6		95	818	14 1	45	5858	13 4	95	4 13	2 4
50	153	17	3 00	891	15	50	5923	1 7	8 00	4100	22 7
0 55	o 2045	- 21 4	3 05	o 968	+ 15 6	5 55	o o 5985	+ 12 0	8 05	o o 3986	- 22 9
60	1939	1 1	10	1047	16 2	60	6043	11	10	3871	23 1
65	1834	0 7	15	113	16 9	65	6097	10 4	15	3755	3 3
70	1732	3	20	1 16	17 5	70	6147	9 6	20	3638	23 4
75	1631	19 9	25	13 5	18 0	75	6193	8 8	25	35 1	3 3
0 80	o o 1533	- 19 3	3 30	o 1396	+ 18 5	5 80	o o 6235	+ 7 9	8 30	o o 34 5	- 3 4
85	1438	18 8	35	1490	19 1	85	627	7 1	35	3287	23 5
90	1345	18 3	40	1587	19 6	90	6306	6 3	40	3170	23 5
95	1 55	17 7	45	1686	0 1	95	6335	5 4	45	3052	23 5
1 00	1168	17 1	50	1788	20 5	6 00	6360	4 5	50	2935	23 3
1 05	o o 1084	- 16 5	3 55	o o 1891	+ 0 9	6 05	o o 6380	+ 3 5	8 55	o o 2819	- 23 2
10	1003	15 9	60	1997	1 3	10	6395	7	60	703	23 0
15	9 5	15 3	65	21 4	21 7	15	6407	0	65	589	22 8
20	850	14 6	70	2214	2 1	20	6415	1 1	70	2475	22 7
25	779	13 8	75	23 5	3	25	6418	+ 0 2	75	2362	2 4
1 30	o o 71	- 13 1	3 80	o o 2437	+ 22 5	6 30	o 6417	- 0 7	8 80	o o 2251	- 22 1
35	648	1 3	85	255	2 8	35	6411	1 6	85	2141	1 8
40	589	11 6	90	665	3 0	40	64 1	2 5	90	2033	1 4
45	53	10 9	95	780	3	45	6386	3 4	95	1927	21 0
50	480	9 9	4 00	2897	3 4	50	6367	4	9 00	1823	20 7
1 55	o o 433	- 9 1	4 05	o o 3014	+ 23 3	6 55	o o 6344	- 5 1	9 05	o o 1720	- 20 3
60	389	8 4	10	3130	23 4	60	6316	6 1	10	16 0	19 7
65	349	7 6	15	3 48	3 6	65	6 83	6 9	15	1523	19 2
70	313	6 8	20	3366	3 5	70	6247	7 6	20	14 8	18 8
75	81	5 9	25	3483	3 4	75	6 07	8 4	25	1335	18 3
1 80	o o 54	- 5 0	4 30	o 3600	+ 23 2	6 80	o o 6163	- 9 3	9 30	o o 1245	- 17 7
85	31	4 1	35	3716	3	85	6114	10 2	35	1158	17 0
90	13	3 1	40	3832	3	90	6061	1 9	40	1075	16 3
95	200	2 5	45	3948	23 0	95	6005	11 7	45	995	15 8
2 00	188	1 7	50	4 6	2 8	7 00	5944	12 5	50	917	15 3
2 05	o o 0183	- 0 6	4 55	o o 4176	+ 22 5	7 05	o o 5880	- 13	9 55	o o 842	- 14 6
10	18	+ 0	60	4287	22 2	10	5812	13 8	60	771	13 8
15	185	1	65	4398	22 0	15	5742	14 5	65	704	13 0
20	193	2 1	70	4507	21 7	20	5667	15 4	70	641	12 3
25	6	9	75	4615	21 3	25	5588	16 0	75	581	11 5
2 30	o o 222	+ 3 7	4 80	o o 4720	+ 20 9	7 30	o o 5507	- 16 5	9 80	o o 526	- 10 7
35	243	4 7	85	48 4	2 5	35	5423	17 1	85	474	9 9
40	269	5 6	90	49 5	19 9	40	5336	17 7	90	4 7	9 0
45	99	6 4	95	5023	19 5	45	5246	18 4	95	384	8
2 50	o o 0333	+ 7	5 00	o o 5120	+ 19 1	7 50	o o 5152	- 19 0	10 00	o o 345	- 7 5

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XXII *continued*

Equation of Longitude

Argument J

1	2	3	1	2	3	1	2	3	1	2	3
J	Equation	$\Delta_{0^d 0^m}$	J	Equation	$\Delta_{0^d 0^m}$	J	Equation	$\Delta_{0^d 0^m}$	J	Equation	$\Delta_{0^d 0^m}$
d	°		d	°		d	°		d	°	
10·00	0·00345	- 7,5	12·50	0·03261	+ 23,6	15·00	0·06280	- 7,0	17·50	0·01511	- 19,1
·05	309	6,7	·55	3379	23,5	·05	6243	7,7	·55	1417	18,6
·10	278	5,8	·60	3496	23,5	·10	6203	8,5	·60	1325	18,2
·15	251	4,9	·65	3614	23,4	·15	6158	9,4	·65	1235	17,5
·20	229	4,0	·70	3730	23,2	·20	6109	10,2	·70	1150	16,7
·25	211	3,3	·75	3846	23,0	·25	6056	11,1	·75	1068	16,3
10·30	0·00196	- 2,4	12·80	0·03960	+ 22,8	15·30	0·05998	- 11,8	17·80	0·00987	- 15,9
·35	187	1,4	·85	4074	22,8	·35	5938	12,5	·85	909	15,3
·40	182	- 0,5	·90	4188	22,6	·40	5873	13,2	·90	834	14,6
·45	182	+ 0,4	·95	4300	22,2	·45	5806	13,9	·95	763	13,6
·50	186	1,3	13·00	4410	21,9	·50	5734	14,7	18·00	698	12,8
10·55	0·00195	+ 2,1	13·05	0·04519	+ 21,6	15·55	0·05659	- 15,4	18·05	0·00635	- 12,1
·60	207	2,9	·10	4626	21,2	·60	5580	16,1	·10	577	11,5
·65	224	4,0	·15	4731	20,8	·65	5498	16,6	·15	520	10,9
·70	247	4,9	·20	4834	20,5	·70	5414	17,1	·20	468	9,9
·75	273	5,7	·25	4936	20,0	·75	5327	17,9	·25	421	8,9
10·80	0·00304	+ 6,5	13·30	0·05034	+ 19,5	15·80	0·05235	- 18,5	18·30	0·00379	- 8,0
·85	338	7,1	·35	5131	19,0	·85	5142	18,9	·35	341	7,3
·90	375	8,0	·40	5224	18,4	·90	5046	19,4	·40	306	6,5
·95	418	8,9	·45	5315	18,0	·95	4948	20,0	·45	276	5,8
11·00	464	9,6	·50	5404	17,4	16·00	4846	20,4	·50	248	5,0
11·05	0·00514	+ 10,5	13·55	0·05489	+ 16,7	16·05	0·04744	- 20,7	18·55	0·00226	- 4,1
·10	569	11,3	·60	5571	16,0	·10	4639	21,2	·60	209	3,0
·15	627	12,2	·65	5649	15,3	·15	4532	21,7	·65	196	2,2
·20	691	12,9	·70	5724	14,7	·20	4422	22,0	·70	187	1,4
·25	756	13,4	·75	5796	14,0	·25	4312	22,2	·75	182	- 0,5
11·30	0·00825	+ 14,3	13·80	0·05864	+ 13,4	16·30	0·04200	- 22,5	18·80	0·00182	+ 0,4
·35	899	15,1	·85	5930	12,7	·35	4087	22,7	·85	186	1,3
·40	976	15,6	·90	5991	11,9	·40	3973	22,8	·90	195	2,3
·45	1055	16,3	·95	6049	11,1	·45	3859	23,0	·95	209	3,1
·50	1139	17,0	14·00	6102	10,3	·50	3743	23,4	19·00	226	4,0
11·55	0·01225	+ 17,6	14·05	0·06152	+ 9,5	16·55	0·03625	- 23,5	19·05	0·00249	+ 4,9
·60	1315	18,1	·10	6197	8,7	·60	3508	23,4	·10	275	5,7
·65	1406	18,5	·15	6239	7,9	·65	3391	23,5	·15	306	6,4
·70	1500	19,1	·20	6276	7,0	·70	3273	23,6	·20	339	7,3
·75	1597	19,7	·25	6309	6,2	·75	3155	23,4	·25	379	8,4
11·80	0·01697	+ 20,2	14·30	0·06338	+ 5,3	16·80	0·03039	- 23,3	19·30	0·00423	+ 9,0
·85	1799	20,6	·35	6362	4,4	·85	2922	23,3	·35	469	9,6
·90	1903	20,9	·40	6382	3,5	·90	2806	23,1	·40	519	10,5
·95	2008	21,3	·45	6397	2,6	·95	2691	22,9	·45	574	11,5
12·00	2116	21,8	·50	6408	1,9	17·00	2577	22,8	·50	634	12,4
12·05	0·02226	+ 22,2	14·55	0·06416	+ 1,0	17·05	0·02463	- 22,7	19·55	0·00698	+ 13,0
·10	2338	22,4	·60	6418	+ 0,1	·10	2350	22,5	·60	764	13,7
·15	2450	22,5	·65	6417	- 0,8	·15	2238	22,1	·65	833	14,3
·20	2563	22,7	·70	6410	1,7	·20	2129	21,7	·70	907	15,2
·25	2677	22,9	·75	6400	2,6	·25	2021	21,3	·75	985	15,8
12·30	0·02792	+ 23,2	14·80	0·06384	- 3,5	17·30	0·01916	- 21,0	19·80	0·01065	+ 16,4
·35	2909	23,4	·85	6365	4,4	·35	1811	20,7	·85	1149	17,0
·40	3026	23,4	·90	6340	5,2	·40	1709	20,3	·90	1235	17,5
·45	3143	23,5	·95	6313	6,0	·45	1608	19,8	·95	1324	18,2
12·50	0·03261	+ 23,6	15·00	0·06280	- 7,0	17·50	0·01511	- 19,1	20·00	0·01417	+ 18,8

Applied Constant : +0·03300.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Longitude

XXIII

		3			3
K	Equa tion	Δ	K	Equa tion	Δ
a			a		
00	0 007 0	- 48	50	1074	+ 39
1	65	48	1	111	37
2	6 3	48	2	1148	35
3	556	47	3	1181	3
4	509	46	4	1 1	9
5	464	45	5	1 39	6
06	0 04 0	- 44	56	001 64	+ 24
7	377	4	7	1 86	20
8	336	4	8	1304	16
9	98	37	9	1318	13
10	6	35	60	13 9	9
11	0 00 8	- 33	61	001336	+ 6
2	196	30	2	1340	+ 3
3	68	27	3	1341	- 1
4	14	4	4	1338	5
5	120	21	5	1331	9
16	0 00101	17	66	00132	- 13
7	86	14	7	1306	16
8	74	11	8	1 88	19
9	65	7	9	1 68	22
20	6	- 3	70	1 44	6
21	0 00059	+ 1	71	001217	- 29
2	6	5	2	1186	3
3	68	8	3	1153	34
4	77	11	4	1118	36
5	90	15	5	1 81	39
26	0 00106	+ 18	76	001041	- 41
7	126		7	999	43
8	149	5	8	956	44
9	175	28	9	911	46
30	05	31	80	864	47
31	00 37	+ 33	81	000817	- 47
2	71	36	2	770	48
3	308	39	3	7 2	49
4	348	41	4	673	49
5	389	4	5	6 5	48
36	0 00432	+ 44	86	000577	- 48
7	476	45	7	530	47
8	522	47	8	484	46
9	569	48	9	439	44
40	6 7	48	90	396	43
41	00665	+ 48	91	000355	41
2	713	49	2	315	39
3	76	49	3	77	37
4	810	48	4	4	34
5	857	47	5	210	31
46	0 00903	+ 46	96	000180	- 9
7	948	45	7	153	6
8	99	43	8	129	2
9	1 34	41	9	109	19
50	0 01074	+ 39	100	0 009	- 15

Appl d C t t + ∞ ∞

XXIV

		3
L	Equa tion	Δ od
00	00100	+ 5
2	110	5
4	1 0	5
6	13	5
8	139	4
10	147	4
12	00 154	+ 3
4	160	3
6	164	
8	167	+ 1
20	168	
22	000168	- 1
4	166	1
6	163	
8	159	3
30	53	3
32	000146	- 4
4	138	5
6	128	5
8	119	5
40	1 9	5
42	0 00098	- 5
4	88	5
6	78	5
8	69	5
50	60	4
52	0 0005	- 4
4	45	3
6	39	3
8	35	2
60	33	- 1
62	0 0003	0
4	32	+ 1
6	34	1
8	37	
70	4	3
72	0 00048	+ 3
4	55	4
6	64	5
8	73	5
80	83	5
82	0 00093	+ 5
4	103	5
6	113	5
8	1 3	5
90	133	5
92	0 00141	+ 4
4	149	4
6	156	3
8	161	2
100	0 00165	+ 2

C ta + ∞ ∞

XXV

		3			3
M	Equa tion	Δ od	M	Equa tion	Δ od
00	0 00050	3	100	0 00022	1
2	45	2	2	0	- 1
4	41		4	2	0
6	37		6	0	0
8	33		8	21	+ 1
10	29		110	3	1
12	0 00 6	- 1	112	0 000 5	+ 1
4	4	1	4	28	2
6	2	1	6	31	2
8	1	- 1	8	35	
20	20	0	120	39	2
22	0 0 0 0	0	122	00043	+ 2
4	21	+ 1	4	47	2
6	2	1	6	51	2
8	4	1	8	56	3
30	27	2	130	61	
32	0 00030	+ 2	132	0 00065	+ 2
4	33	2	4	69	
6	37		6	72	
8	4		8	75	1
40	46	2	140	77	1
42	0 00051	+ 2	142	0 00079	+ 1
4	55		4	8	0
6	60	2	6	80	0
8	64	2	8	80	0
50	68		150	79	- 1
52	0 00 71	+ 2	152	0 00077	- 1
4	74	1	4	75	1
6	76	1	6	72	2
8	78	1	8	69	2
60	79	+ 1	160	65	2
62	0 00080	0	162	0 00061	- 2
4	80	0	4	56	
6	79	- 1	6	52	2
8	77	1	8	47	2
70	75	1	170	43	2
72	0 00073	- 1	172	0 00039	-
4	70	2	4	35	
6	66		6	31	2
8	6	2	8	28	2
80	58		180	25	1
82	00 53	-	182	0 00023	- 1
4	49		4	21	- 1
6	44	2	6	20	0
8	40	2	8	0	
90	36	2	190	0	0
92	0 0003		192	0 00021	+ 1
4	29		4	23	1
6	6	1	6	6	2
8	4	1	8	29	2
100	0 0002	- 1	200	0 00032	

Appl d Co tant + ∞ ∞

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XXVI      Equation of Variation of the Radius Vector, Doubled.      Argument E

1	2	3	1	2	3	1	2	3	1	2	3
E	Equation	Δ	E	Equation	Δ	E	Equation	Δ	E	Equation	Δ
<sup>d</sup> 0.0	- 0.01580	+ 0	<sup>d</sup> 5.0	+ 0.00355	+ 53	<sup>d</sup> 10.0	+ 0.01096	- 32	<sup>d</sup> 15.0	- 0.01287	- 34
.1	1579	2	.1	407	52	.1	1063	34	.1	1320	32
.2	1576	5	.2	459	51	.2	1029	35	.2	1351	30
.3	1570	7	.3	509	50	.3	993	37	.3	1380	28
.4	1563	8	.4	559	50	.4	956	39	.4	1407	26
.5	1554	11	.5	608	49	.5	917	40	.5	1432	24
0.6	- 0.01542	+ 13	5.6	+ 0.00657	+ 48	10.6	+ 0.00876	- 41	15.6	- 0.01455	- 23
.7	1528	15	.7	704	47	.7	835	43	.7	1477	21
.8	1512	17	.8	750	45	.8	791	45	.8	1497	19
.9	1495	18	.9	794	44	.9	746	45	.9	1514	16
1.0	1476	21	6.0	837	43	11.0	701	46	16.0	1529	14
1.1	- 0.01454	+ 23	6.1	+ 0.00879	+ 41	11.1	+ 0.00654	- 48	16.1	- 0.01542	- 13
.2	1430	24	.2	919	40	.2	605	49	.2	1554	11
.3	1405	27	.3	958	38	.3	556	50	.3	1564	9
.4	1377	29	.4	995	37	.4	506	51	.4	1571	6
.5	1348	30	.5	1031	36	.5	455	51	.5	1576	4
1.6	- 0.01317	+ 32	6.6	+ 0.01066	+ 34	11.6	+ 0.00404	- 52	16.6	- 0.01579	- 2
.7	1284	34	.7	1098	32	.7	351	53	.7	1580	0
.8	1250	35	.8	1129	31	.8	298	53	.8	1579	+ 2
.9	1214	37	.9	1159	29	.9	245	53	.9	1576	4
2.0	1176	39	7.0	1187	27	12.0	192	54	17.0	1571	6
2.1	- 0.01137	+ 40	7.1	+ 0.01213	+ 25	12.1	+ 0.00137	- 55	17.1	- 0.01564	+ 9
.2	1097	41	.2	1237	23	.2	82	55	.2	1554	12
.3	1055	43	.3	1259	22	.3	+ 27	56	.3	1541	14
.4	1012	44	.4	1280	19	.4	- 29	56	.4	1526	16
.5	968	45	.5	1297	17	.5	85	56	.5	1510	17
2.6	- 0.00922	+ 47	7.6	+ 0.01313	+ 16	12.6	- 0.00141	- 56	17.6	- 0.01492	+ 19
.7	875	48	.7	1328	14	.7	196	55	.7	1472	21
.8	826	49	.8	1340	11	.8	251	55	.8	1450	23
.9	777	50	.9	1350	9	.9	306	55	.9	1426	25
3.0	727	51	8.0	1357	7	13.0	361	55	18.0	1401	26
3.1	- 0.00676	+ 52	8.1	+ 0.01363	+ 5	13.1	- 0.00416	- 55	18.1	- 0.01374	+ 28
.2	624	52	.2	1367	3	.2	470	54	.2	1345	30
.3	572	53	.3	1369	+ 1	.3	523	53	.3	1314	32
.4	519	54	.4	1370	- 1	.4	576	53	.4	1282	34
.5	465	54	.5	1368	3	.5	628	52	.5	1247	36
3.6	- 0.00411	+ 54	8.6	+ 0.01364	- 5	13.6	- 0.00680	- 51	18.6	- 0.01211	+ 37
.7	357	55	.7	1358	7	.7	730	50	.7	1174	38
.8	302	55	.8	1350	9	.8	780	50	.8	1135	40
.9	247	55	.9	1340	12	.9	830	49	.9	1094	42
4.0	192	56	9.0	1327	14	14.0	878	48	19.0	1051	43
4.1	- 0.00136	+ 56	9.1	+ 0.01312	- 16	14.1	- 0.00925	- 46	19.1	- 0.01008	+ 44
.2	80	56	.2	1295	18	.2	970	45	.2	963	45
.3	- 25	55	.3	1276	19	.3	1015	44	.3	918	46
.4	+ 30	55	.4	1256	21	.4	1058	42	.4	871	48
.5	85	55	.5	1234	23	.5	1099	41	.5	822	50
4.6	+ 0.00140	+ 55	9.6	+ 0.01210	- 25	14.6	- 0.01140	- 40	19.6	- 0.00772	+ 50
.7	195	54	.7	1184	27	.7	1179	39	.7	722	51
.8	248	54	.8	1156	29	.8	1217	37	.8	671	52
.9	302	54	.9	1127	30	.9	1253	35	.9	619	52
5.0	+ 0.00355	+ 53	10.0	+ 0.01096	- 32	15.0	- 0.01287	- 34	20.0	- 0.00567	+ 52

Applied Constant: - .00200.

The Equation of this Table must be supplemented by those of Tables XXVII-XXIX.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

Equations of the Variation of Radius Vector, Doubled

XXVII

XXVIII

XXIX

C	Equation	C	Equatio
d			
00	0 00 64	100	0 00043
2	64	2	45
4	63	4	48
6	62	6	5
8	61	8	5
10	6	110	55
12	0 00 58	112	0 00057
4	56	4	59
6	54	6	60
8	52	8	62
20	49	120	63
22	0 00047	122	0 00064
4	44	4	64
6	4	6	64
8	39	8	64
30	37	130	63
32	0 00035	132	0 00062
4	33	4	61
6	3	6	59
8	30	8	57
40	29	140	55
42	0 000 8	142	0 00053
4	27	4	51
6	26	6	48
8	5	8	46
50	25	150	43
52	0 00025	152	0 00041
4	4	4	39
6	24	6	37
8	24	8	35
60	4	160	33
62	0 000 4	162	0 00031
4	24	4	30
6	4	6	8
8	24	8	27
70	24	170	27
72	0 00024	172	0 00026
4	5	4	25
6	25	6	25
8	26	8	25
80	6	180	24
82	0 00 27	182	0 000 4
4	28	4	24
6	29	6	4
8	31	8	4
90	3	190	4
92	0 00034	192	0 00024
4	36	4	24
6	38	6	4
8	40	8	25
100	0 00043	200	0 00 25

C t t + 000

D	Equation	$\frac{\Delta}{0 \text{ } 1}$
00	0 00076	- 0 0
04	76	0 3
08	74	0 5
12	7	0 5
16	70	0 8
20	66	0 8
24	0 00062	- 1 0
28	58	1 1
32	53	1 3
36	48	1 4
40	42	1 4
44	0 00037	- 1 3
48	3	1 3
52	27	1 3
56	22	1 3
60	17	1 1
64	0 00013	- 0 9
68	10	0 8
72	7	0 6
76	5	0 4
80	4	- 0 1
84	0 00004	+ 0 1
88	5	0 3
92	6	0 4
96	8	0 5
100	11	0 8
104	0 00014	+ 0 9
108	18	1 1
112	23	1 3
116	28	1 3
120	33	1 3
124	0 00038	+ 1 4
128	44	1 3
132	49	1 3
136	54	1 3
140	59	1 1
144	0 00063	+ 1 0
148	67	0 9
152	70	0 8
156	73	0 6
160	75	0 4
164	0 00076	+ 0 1
168	76	- 0 1
172	75	0 3
176	74	0 4
180	72	0 6
184	0 00069	- 0 9
188	65	1 0
192	61	1 0
196	57	1 1
200	0 00052	- 1 1

C t t + 000

H	Equation
d	
0	0 00009
1	10
2	1
3	15
4	19
5	23
6	0 00027
7	30
8	31
9	31
10	29
11	0 00026
12	23
13	18
14	14
15	11
16	0 00009
17	9
18	10
19	13
20	0 00016

C t t + 000

The ig fti Eq ti  
p lti

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XXX

Equation of Latitude

Argument J

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
J	Equation	$\Delta$ 0d.0r	$\frac{1}{2} \Delta^2$	J	Equation	$\Delta$ 0d.0r	$\frac{1}{2} \Delta^2$	J	Equation	$\Delta$ 0d.0r	$\frac{1}{2} \Delta^2$	J	Equation	$\Delta$ 0d.0r	$\frac{1}{2} \Delta^2$
d				d				d				d			
0.00	1.34000	+494,8	0,0	2.00	2.23911	+361,5	-0,6	4.00	2.65286	+32,0	-0,9	6.00	2.35578	-315,0	-0,7
.04	1.35979	494,8	0,0	.04	2.25347	356,4	0,6	.04	2.65399	24,5	0,9	.04	2.34306	320,4	0,7
.08	1.37958	494,6	0,0	.08	2.26762	351,3	0,6	.08	2.65482	17,1	0,9	.08	2.33015	325,9	0,7
.12	1.39936	494,3	0,0	.12	2.28157	346,1	0,7	.12	2.65536	9,8	0,9	.12	2.31699	331,9	0,7
.16	1.41912	493,8	0,0	.16	2.29531	340,6	0,7	.16	2.65560	+2,3	0,9	.16	2.30360	337,4	0,7
.20	1.43886	493,4	0,0	.20	2.30882	335,1	0,7	.20	2.65554	-5,3	0,9	.20	2.29000	342,8	0,7
0.24	1.45859	+492,9	0,0	2.24	2.32212	+329,8	-0,7	4.24	2.65518	-12,8	-0,9	6.24	2.27618	-348,0	-0,7
.28	1.47829	492,0	-0,1	.28	2.33520	324,1	0,7	.28	2.65452	20,1	0,9	.28	2.26216	353,3	0,7
.32	1.49795	491,1	0,1	.32	2.34805	318,3	0,7	.32	2.65357	27,5	0,9	.32	2.24792	358,4	0,6
.36	1.51758	490,3	0,1	.36	2.36066	312,5	0,7	.36	2.65232	35,0	0,9	.36	2.23349	363,4	0,6
.40	1.53717	489,1	0,1	.40	2.37305	306,9	0,7	.40	2.65077	42,5	0,9	.40	2.21885	368,6	0,7
0.44	1.55671	+488,0	-0,1	2.44	2.38521	+301,0	-0,7	4.44	2.64892	-49,9	-0,9	6.44	2.20400	-374,0	-0,6
.48	1.57621	486,9	0,2	.48	2.39713	295,0	0,8	.48	2.64678	57,4	0,9	.48	2.18897	378,4	0,6
.52	1.59566	485,5	0,2	.52	2.40881	289,0	0,8	.52	2.64433	64,9	0,9	.52	2.17373	383,1	0,6
.56	1.61505	483,9	0,2	.56	2.42025	282,9	0,8	.56	2.64159	72,3	0,9	.56	2.15832	387,6	0,6
.60	1.63437	482,3	0,2	.60	2.43144	276,5	0,8	.60	2.63855	79,6	0,9	.60	2.14272	392,3	0,6
0.64	1.65363	+480,5	-0,2	2.64	2.44237	+270,1	-0,8	4.64	2.63522	-87,0	-0,9	6.64	2.12694	-396,8	-0,6
.68	1.67281	478,6	0,2	.68	2.45305	263,9	0,8	.68	2.63159	94,4	0,9	.68	2.11098	401,3	0,5
.72	1.69192	476,8	0,2	.72	2.46348	257,8	0,8	.72	2.62767	101,5	0,9	.72	2.09484	405,5	0,5
.76	1.71095	474,8	0,3	.76	2.47367	251,6	0,8	.76	2.62347	108,8	0,9	.76	2.07854	409,5	0,5
.80	1.72990	472,6	0,3	.80	2.48361	245,0	0,8	.80	2.61897	116,1	0,9	.80	2.06208	413,8	0,5
0.84	1.74876	+470,4	-0,3	2.84	2.49327	+238,4	-0,8	4.84	2.61418	-123,5	-0,9	6.84	2.04544	-418,0	-0,5
.88	1.76753	468,0	0,3	.88	2.50268	231,9	0,8	.88	2.60909	130,8	0,9	.88	2.02864	421,9	0,5
.92	1.78620	465,5	0,3	.92	2.51182	225,3	0,8	.92	2.60372	137,8	0,9	.92	2.01169	425,6	0,5
.96	1.80477	463,0	0,3	.96	2.52070	218,6	0,8	.96	2.59807	145,0	0,9	.96	1.99459	429,5	0,5
1.00	1.82324	460,4	0,3	3.00	2.52931	211,9	0,9	5.00	2.59212	152,1	0,9	7.00	1.97733	433,1	0,4
1.04	1.84160	+457,5	-0,4	3.04	2.53765	+205,0	-0,8	5.04	2.58590	-159,3	-0,9	7.04	1.95994	-436,5	-0,4
.08	1.85984	454,6	0,4	.08	2.54571	198,4	0,9	.08	2.57938	166,5	0,9	.08	1.94241	440,0	0,4
.12	1.87797	451,8	0,4	.12	2.55352	191,4	0,9	.12	2.57258	173,4	0,9	.12	1.92474	443,5	0,4
.16	1.89598	448,5	0,4	.16	2.56104	184,5	0,9	.16	2.56551	180,4	0,9	.16	1.90693	446,8	0,4
.20	1.91385	445,1	0,4	.20	2.56828	177,6	0,9	.20	2.55815	187,4	0,9	.20	1.88900	449,8	0,4
1.24	1.93159	+441,9	-0,4	3.24	2.57525	+170,8	-0,9	5.24	2.55052	-194,1	-0,8	7.24	1.87095	-452,9	-0,4
.28	1.94920	438,6	0,4	.28	2.58194	163,6	0,9	.28	2.54262	200,9	0,9	.28	1.85277	455,9	0,4
.32	1.96668	435,4	0,4	.32	2.58834	156,5	0,9	.32	2.53445	207,8	0,9	.32	1.83448	458,6	0,3
.36	1.98403	431,9	0,5	.36	2.59446	149,3	0,9	.36	2.52600	214,6	0,9	.36	1.81608	461,4	0,3
.40	2.00123	428,1	0,5	.40	2.60028	142,1	0,9	.40	2.51728	221,1	0,8	.40	1.79757	464,1	0,3
1.44	2.01828	+424,1	-0,5	3.44	2.60583	+135,3	-0,9	5.44	2.50831	-227,6	-0,8	7.44	1.77895	-466,3	-0,3
.48	2.03516	420,3	0,5	.48	2.61110	128,1	0,9	.48	2.49907	234,4	0,8	.48	1.76027	468,6	0,3
.52	2.05190	416,5	0,5	.52	2.61608	120,8	0,9	.52	2.48956	241,0	0,8	.52	1.74146	471,4	0,3
.56	2.06848	412,4	0,5	.56	2.62076	113,4	0,9	.56	2.47979	247,6	0,8	.56	1.72256	473,6	0,3
.60	2.08489	408,1	0,5	.60	2.62515	106,1	0,9	.60	2.46975	254,1	0,8	.60	1.70357	475,4	0,2
1.64	2.10113	+403,9	-0,5	3.64	2.62925	+98,9	-0,9	5.64	2.45946	-260,3	-0,8	7.64	1.68453	-477,5	-0,3
.68	2.11720	399,4	0,6	.68	2.63306	91,5	0,9	.68	2.44893	266,5	0,8	.68	1.66537	479,6	0,2
.72	2.13308	394,9	0,6	.72	2.63657	84,0	0,9	.72	2.43814	272,9	0,8	.72	1.64616	481,1	0,2
.76	2.14879	390,5	0,6	.76	2.63978	76,6	0,9	.76	2.42710	279,1	0,8	.76	1.62688	482,9	0,2
.80	2.16432	386,0	0,6	.80	2.64270	69,4	0,9	.80	2.41581	285,3	0,8	.80	1.60753	484,5	0,2
1.84	2.17967	+381,3	-0,6	3.84	2.64533	+62,0	-0,9	5.84	2.40428	-291,3	-0,8	7.84	1.58812	-486,0	-0,2
.88	2.19482	376,4	0,6	.88	2.64766	54,6	0,9	.88	2.39251	297,3	0,7	.88	1.56865	487,5	0,2
.92	2.20978	371,6	0,6	.92	2.64970	47,1	0,9	.92	2.38050	303,1	0,7	.92	1.54912	488,6	0,1
.96	2.22455	366,6	0,6	.96	2.65143	39,5	0,9	.96	2.36826	309,0	0,7	.96	1.52956	489,5	0,1
2.00	2.23911	+361,5	-0,6	4.00	2.65286	+32,0	-0,9	6.00	2.35578	-315,0	-0,7	8.00	1.50996	-490,5	-0,1

Applied Constant: +1.34000.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XXX continued

Equation of Latitude

Argument J

J	Equation	$\Delta$	$\frac{1}{2} \Delta^2$	J	Equation	$\Delta$	$\frac{1}{2} \Delta^2$	J	Equation	$\Delta$	$\frac{1}{2} \Delta^2$	J	Equation	$\Delta$	$\frac{1}{2} \Delta^2$
<sup>a</sup> 8 00	1 50996	490 5	-0 1	10 00	57264	-40 3	+0 5	12 00	0 049 4	- 96 0	+0 9	14 00	0 2 457	+ 62 8	+0 8
04	1 49 3	491 4	0 1	04	55664	397 8	6	04	4555	88 6	0 9	04	3521	69 1	0 8
08	1 47 65	491 1	1	08	5408	393 3	0 6	08	4 15	81 3	9	08	4610	275 3	0 8
12	1 45095	49 9	1	12	52518	388 8	0 6	12	39 5	73 9	0 9	12	57 3	281 3	0 8
16	1 43	493 6	0 1	16	5 97	384 3	0 6	16	3624	66 4	0 9	16	6860	287 4	0 8
20	1 41146	494 1	-0 1	20	49444	379 5	6	20	3374	58 8	0 9	20	280 2	93 4	0 8
8 24	1 39169	-494 5	0	10 24	0 47936	-374 6	+0 6	12 24	0 03154	- 51 4	+0 9	14 24	0 9207	+299 8	+0 8
28	1 37190	494 8		28	46447	369 6	0 6	28	2963	44 4	0 9	28	3 4	305 9	0 7
32	1 35211	494 8	0 0	32	44979	364 5	6	32	799	36 9	0 9	32	31654	311 4	0 7
36	33 3	494 8		36	43531	359 6	0 6	36	2668	9 3	0 9	36	32911	317 1	0 7
40	1 31253	494 5	0	40	4 10	354 5	0 6	40	2565	1 9	9	40	34191	3 8	0 7
8 44	1 9 76	-494 3		10 44	40695	-349 3	+0 7	12 44	0 02493	- 14 3	+0 9	14 44	0 35493	+3 8 3	+0 7
48	1 7 99	494 1	0 0	48	39308	344 0	0 7	48	451	- 6 8	0 9	48	36817	333 9	0 7
52	1 53 3	493 8	+0 1	52	37943	338 4	0 7	52	439	+ 0 6	0 9	52	38164	339 3	0 7
56	1 3349	493 1	0 1	56	36601	332 9	0 7	56	456	8 0	0 9	56	39531	344 6	0 7
60	1 1378	49 5	1	60	35 80	3 7 4	7	60	2503	15 5	0 9	60	409 1	350 0	0 7
8 64	1 19409	-491 8	+0 1	10 64	0 3398	-3 1 8	+0 7	12 64	0 02580	+ 23 0	+0 9	14 64	0 42331	+355 3	+0 7
68	1 17444	49 9		68	3 7 6	316 1	0 7	68	2687	30 5	0 9	68	43763	360 5	0 6
72	1 1548	489 9	0 1	72	31453	310 4	0 7	72	824	38 0	0 9	72	45215	365 5	0 6
76	1 135 5	488 6	2	76	30 23	3 4 5	0 7	76	991	45 4	0 9	76	46687	370 4	0 6
80	1 11573	487 4	0	80	9017	98 6	0 7	80	3187	52 9	0 9	80	48178	375 4	0 6
8 84	1 09626	-486 3	+0	10 84	0 27834	-292 6	+0 8	12 84	0 03414	+ 60 3	+0 9	14 84	0 49690	+380 3	+0 6
88	1 07683	484 9	0	88	26676	286 6	0 8	88	3669	67 5	0 9	88	51220	384 9	0 6
92	1 5747	483 3	0	92	554	80 5	0 0	92	3954	75 1	0 9	92	5 769	389 5	0 6
96	1 3817	48 6		96	443	274 4	0 8	96	4 70	82 6	0 9	96	54336	394	0 6
9 00	1 01894	479 9	0 2	11 00	3347	268 1	0 8	13 00	4615	89 9	0 9	15 00	559 1	398 5	0 6
9 04	0 99978	-478 0	+0	11 04	87	- 61 8	+0 8	13 04	0 04989	+ 97 1	+0 9	15 04	0 57524	+402 9	+0 5
08	98 7	476 1	0 3	08	21253	55 4	0 8	08	539	104 4	0 9	08	59144	407 1	0 5
12	96169	474	0 3	12	0 44	249 0	0 8	12	58 4	111 6	9	12	60781	411 4	0 5
16	94 78	471 8	0 3	16	19261	4 5	8	16	6 85	118 9	0 9	16	62435	415 5	0 5
20	92395	469 6	3	20	18304	236 0	8	20	6775	126 3	0 9	20	64105	419 4	0 5
9 24	9 5 1	-467 3	+0 3	11 24	0 17373	- 29 4	+0 8	13 24	0 07 95	+133 6	+0 9	15 24	0 65790	+423 3	+0 5
28	88657	464 6	3	28	16469	6	8	28	7844	140 8	0 9	28	67491	4 7 1	0 5
32	86804	46	0 3	32	1559	16 0	0 8	32	8421	147 8	0 9	32	69 07	430 9	0 5
36	84961	459 3	4	36	14741	09 3	0 8	36	9026	154 9	0 9	36	70938	434 5	0 4
40	83130	456 3	0 4	40	13918	2 2 5	8	40	9660	161 9	0 9	40	72683	438 0	0 4
9 44	0 81311	-453 3	+0 4	11 44	0 131 1	-195 8	+0 9	13 44	0 103 1	+169 0	+0 9	15 44	0 74442	+441 4	+0 4
48	79504	45 3	4	48	1235	188 5	0 9	48	1101	176 3	0 9	48	76214	444 6	0 4
52	777 9	447 3	4	52	11613	181 6	9	52	11731	183 0	0 8	52	77999	447 9	4
56	759 6	444 1	0 4	56	10899	175 0	9	56	1 476	189 8	0 9	56	79797	451 0	0 4
60	74156	44 9	0 4	60	10213	167 9	0 9	60	13 49	196 8	0 9	60	81607	454 0	0 4
9 64	0 7 399	-437 4	+0 4	11 64	0 9556	-16 9	+ 9	13 64	0 14050	+203 6	+0 9	15 64	0 83429	+457 0	+0 4
68	70657	433 8	4	68	89 6	153 9	0 9	68	14878	10 4	0 8	68	85 63	459 9	3
72	689 9	430 3	0 5	72	83 5	146 6	9	72	15733	217 0	0 8	72	87108	462 5	0 3
76	67 5	4 6 6	0 5	76	7753	139 5	0 9	76	16614	3 8	0 8	76	88963	465 0	0 3
80	65516	4 6	0 5	80	7 09	13 4	0 9	80	175 3	30 5	0 8	80	90828	467 5	0 3
9 84	63834	-418 6	+0 5	11 84	6694	-1 5 1	+0 9	13 84	18458	+ 37	+0 8	15 84	0 92703	+469 9	+0 3
88	6 167	414 8	5	88	6 8	117 9	0 9	88	19419	43 5	0 8	88	94587	472 3	0 3
92	6 516	41 6	5	92	5751	110 6	0 9	92	20406	250 0	0 8	92	96481	474 4	0 3
96	58882	406 5	5	96	53 3	103 4	0 9	96	21419	56 4	0 8	96	98382	476 3	0 2
10 00	0 57 64	-402 3	+0 5	12 00	0 04924	- 96 0	+ 9	14 00	0 457	+26 8	+0 8	16 00	1 00291	+478 3	+0 2



# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

Equations of Latitude

XXX continued

XXXI

1	2	3	4
J	Equation	$\Delta$ 0 <sup>d</sup> .01	$\frac{1}{2} \Delta^2$
d			
16°00	1°00291	+478,3	+0,2
04	1°02208	480,1	0,2
08	1°04132	481,9	0,2
12	1°06063	483,5	0,2
16	1°08000	485,0	0,2
20	1°09943	486,4	0,2
16°24	1°11891	+487,6	+0,2
28	1°13844	488,9	0,2
32	1°15802	490,0	0,1
36	1°17764	491,0	0,1
40	1°19730	491,8	0,1
16°44	1°21698	+492,5	+0,1
48	1°23670	493,3	0,1
52	1°25644	493,8	+0,1
56	1°27620	494,1	0,0
60	1°29597	494,5	0,0
16°64	1°31576	+494,8	0,0
68	1°33555	494,9	0,0
72	1°35535	494,8	0,0
76	1°37513	494,5	0,0
80	1°39491	494,4	0,0
16°84	1°41468	+494,0	-0,1
88	1°43443	493,5	0,1
92	1°45416	492,9	0,1
96	1°47386	491,9	0,1
17°00	1°49351	491,1	0,1
17°04	1°51315	+490,5	-0,1
08	1°53275	489,5	0,1
12	1°55231	488,4	0,2
16	1°57182	487,1	0,2
20	1°59128	485,8	0,2
17°24	1°61068	+484,3	-0,2
28	1°63002	482,8	0,2
32	1°64930	481,0	0,2
36	1°66850	479,1	0,2
40	1°68763	477,1	0,3
17°44	1°70667	+475,1	-0,3
48	1°72564	473,0	0,3
52	1°74451	470,8	0,3
56	1°76330	468,5	0,3
60	1°78199	466,1	0,3
17°64	1°80059	+463,6	-0,3
68	1°81908	460,9	0,3
72	1°83746	458,1	0,3
76	1°85573	455,4	0,4
80	1°87389	452,5	0,4
17°84	1°89193	+449,4	-0,4
88	1°90984	446,1	0,4
92	1°92762	442,8	0,4
96	1°94526	439,4	0,4
18°00	1°96277	+436,1	-0,4

Constant: +1°34000.

1	2	3	1	2	3	1	2	3
M	Equation	$\Delta$ 0 <sup>d</sup> .01	M	Equation	$\Delta$ 0 <sup>d</sup> .01	M	Equation	$\Delta$ 0 <sup>d</sup> .01
d			d			d		
0°00	0°14000	+50,4	2°50	0°24804	+29,6	5°00	0°26722	-15,4
05	1°14252	50,3	55	2°24950	28,8	05	2°26643	16,3
10	1°14503	50,2	60	2°25092	28,0	10	2°26559	17,2
15	1°14754	50,2	65	2°25230	27,2	15	2°26471	18,1
20	1°15005	50,2	70	2°25364	26,4	20	2°26378	19,1
25	1°15256	50,1	75	2°25494	25,6	25	2°26280	20,0
0°30	0°15506	+50,0	2°80	0°25620	+24,8	5°30	0°26178	-20,8
35	1°15756	49,9	85	2°25742	24,0	35	2°26072	21,6
40	1°16005	49,7	90	2°25860	23,2	40	2°25962	22,4
45	1°16253	49,6	95	2°25974	22,5	45	2°25848	23,3
50	1°16501	49,5	3°00	2°26085	21,6	50	2°25729	24,2
0°55	0°16748	+49,3	3°05	0°26190	+20,6	5°55	0°25606	-25,0
60	1°16994	49,1	10	2°26291	19,8	60	2°25479	25,8
65	1°17239	48,9	15	2°26388	18,9	65	2°25348	26,6
70	1°17483	48,6	20	2°26480	18,0	70	2°25213	27,4
75	1°17725	48,3	25	2°26568	17,1	75	2°25074	28,2
0°80	0°17966	+48,1	3°30	0°26651	+16,2	5°80	0°24931	-28,9
85	1°18206	47,8	35	2°26730	15,4	85	2°24785	29,6
90	1°18444	47,4	40	2°26805	14,5	90	2°24635	30,4
95	1°18680	47,1	45	2°26875	13,5	95	2°24481	31,2
1°00	1°18915	46,8	50	2°26940	12,6	6°00	2°24323	32,0
1°05	0°19148	+46,4	3°55	0°27001	+11,7	6°05	0°24161	-32,7
10	1°19379	46,0	60	2°27057	10,7	10	2°23996	33,4
15	1°19608	45,6	65	2°27108	9,8	15	2°23827	34,1
20	1°19835	45,2	70	2°27155	8,9	20	2°23655	34,7
25	2°0060	44,8	75	2°27197	7,9	25	2°23480	35,4
1°30	0°20283	+44,4	3°80	0°27234	+7,0	6°30	0°23301	-36,1
35	2°0504	44,0	85	2°27267	6,1	35	2°23119	36,8
40	2°0723	43,6	90	2°27295	5,1	40	2°22933	37,5
45	2°0940	43,1	95	2°27318	4,2	45	2°22744	38,1
50	2°1154	42,6	4°00	2°27337	3,3	50	2°22552	38,7
1°55	0°21366	+42,1	4°05	0°27351	+2,3	6°55	0°22357	-39,3
60	2°21575	41,5	10	2°27360	1,4	60	2°22159	39,9
65	2°21781	40,9	15	2°27365	+0,5	65	2°21958	40,5
70	2°21984	40,3	20	2°27365	-0,5	70	2°21754	41,0
75	2°22184	39,7	25	2°27360	1,5	75	2°21548	41,5
1°80	0°22381	+39,1	4°30	0°27350	-2,4	6°80	0°21339	-42,1
85	2°22575	38,5	35	2°27336	3,3	85	2°21127	42,6
90	2°22766	37,9	40	2°27317	4,3	90	2°20913	43,1
95	2°22954	37,3	45	2°27293	5,3	95	2°20696	43,6
2°00	2°23139	36,7	50	2°27264	6,2	7°00	2°20477	43,9
2°05	0°23321	+36,1	4°55	0°27231	-7,1	7°05	0°20257	-44,3
10	2°23500	35,4	60	2°27193	8,1	10	2°20034	44,9
15	2°23675	34,7	65	2°27150	9,0	15	1°19808	45,4
20	2°23847	34,0	70	2°27103	9,9	20	1°19580	45,8
25	2°24015	33,3	75	2°27051	10,9	25	1°19350	46,1
2°30	0°24180	+32,7	4°80	0°26994	-11,8	7°30	0°19119	-46,4
35	2°24342	32,0	85	2°26933	12,7	35	1°18886	46,8
40	2°24500	31,2	90	2°26867	13,6	40	1°18651	47,2
45	2°24654	30,4	95	2°26797	14,5	45	1°18414	47,5
2°50	0°24804	+29,6	5°00	0°26722	-15,4	7°50	0°18176	-47,8

Applied Constant: +0°14000.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XXXI continued

Equation of Latitude

Argument M

M	Equation	$\Delta$ od oi	M	Equation	$\Delta$ o o	M	Equation	$\Delta$ o oi	M	Equation	$\Delta$ od oi	M	Equation	$\Delta$ od oi
7 50	0 18176	-47 8	10 00	0 06194	-40 9	12 50	0 00635	-0 3	15 00	0 06067	+40 6	17 50	0 18025	+48 1
55	17936	48 1	05	5991	40 3	55	636	+0 6	05	6 71	41 1	55	18265	47 8
60	17695	48 3	10	5791	39 7	60	641	1 5	10	6478	41 6	60	18503	47 4
65	17453	48 6	15	5594	39 0	65	651	2 5	15	6687	4 1	65	18739	47 0
70	17 9	48 9	20	54 1	38 4	70	666	3 5	20	6899	42 6	70	18973	46 6
75	16964	49 1	25	5 10	37 9	75	686	4 5	25	7113	43 1	75	19205	46 3
7 80	16718	-49 3	10 30	0 0502	-37 3	12 80	0 00711	+5 4	15 30	0 07330	+43 6	17 80	0 19436	+45 9
85	16471	49 5	35	4837	36 7	85	74	6 3	35	7549	44 0	85	19664	45 5
90	16 3	49 6	40	4655	36 0	90	774	7 3	40	7770	44 5	90	19891	45 1
95	15975	49 7	45	4477	35 3	95	813	8	45	7994	45 0	95	0115	44 7
8 00	157 6	49 9	50	4302	34 6	13 00	856	9 1	50	8220	45 4	18 00	20338	44 3
8 05	0 15476	-50 0	10 55	0 04131	-33 9	13 05	0 00904	+10 1	15 55	0 08448	+45 8	18 05	0 20558	+43 9
10	15 6	5 1	60	3963	33	10	957	11 0	60	8678	46	10	20777	43 5
15	14975	50 2	65	3799	3 5	15	1014	11 9	65	8910	46 6	15	0993	43 0
20	147 4	50	70	3638	31 8	20	1076	1 8	70	9144	46 9	20	21 07	42 5
25	14473	50 3	75	3481	31	25	111	13 7	75	9379	47 2	25	1418	41 9
8 30	0 14 1	-5 4	10 80	0 03328	-30 3	13 30	0 0113	+14 6	15 80	0 9616	+47 5	18 30	0 21626	+41 4
35	13969	50 4	85	3178	29 6	35	1 88	15 5	85	09854	47 8	35	2183	40 8
40	13717	50 3	90	3032	28 8	40	1368	16 4	90	10094	48 1	40	034	40 1
45	13466	50 2	95	890	28 0	45	1452	17 3	95	10335	48 4	45	22233	39 5
50	13 15	50 2	11 00	752	27	50	1541	18 2	16 00	10578	48 7	50	22429	39 0
8 55	0 12964	-5 2	11 05	0 0 618	6 4	13 55	0 01634	+19 1	16 05	0 10822	+48 9	18 55	0 22623	+38 5
60	12713	50 1	10	488	25 6	60	173	0 0	10	11067	49 1	60	814	37 8
65	12463	5 0	15	362	4 8	65	1834	0 9	15	11313	49 3	65	3001	37 0
70	12 13	49 9	20	40	23 9	70	1941	1 8	20	11560	49 5	70	3184	36 5
75	11964	49 7	25	1 3	23 0	75	052	2 6	25	11808	49 7	75	3366	36 0
8 80	0 11716	-49 5	11 30	0 02010	-2	13 80	0 02167	+23 4	16 30	0 1 057	+49 8	18 80	0 23544	+35
85	11469	49 4	35	1901	1 4	85	2286	24	35	1 306	49 9	85	23718	34 5
90	11	49 3	40	1796	20 5	90	409	5 0	40	1 556	50	90	3889	33 8
95	10976	49 1	45	1696	19 6	95	536	5 8	45	1 806	50 1	95	24056	33 1
9 00	10731	48 8	50	16	18 8	14 00	2667	26 6	50	13057	50 2	19 00	4 20	32 6
9 05	0 10488	-48 5	11 55	0 01508	-17 9	14 05	0 0 80	+27 4	16 55	0 13308	+50 2	19 05	0 4382	+31 9
10	10 46	48 3	60	1421	17 0	10	2941	8	60	13559	50 2	10	24539	31 0
15	1 005	48	65	1338	16 1	15	3084	9	65	13810	50 3	15	24692	30 2
20	09766	47 7	70	1 60	15	20	3 31	29 8	70	14062	50 4	20	24841	9 4
25	095 8	47 5	75	1186	14 3	25	3382	30 6	75	14314	50 3	25	4986	8 6
9 30	09 91	-47 2	11 80	0 01117	-13 4	14 30	0 03537	+31 4	16 80	0 14565	+50	19 30	0 5127	+27 8
35	9 56	46 8	85	1052	1 5	35	3696	32	85	14816	50	35	25264	7 0
40	8823	46 4	90	992	11 5	40	3859	3 9	90	15067	5	40	5397	6 2
45	8592	46	95	937	1 6	45	40 5	33 5	95	15318	50 1	45	5526	25 4
50	8363	45 6	12 00	886	9 7	50	4194	34	17 00	15568	50 0	50	5651	24 6
9 55	0 08136	-45	12 05	0 00840	-8 8	14 55	0 04367	+34 9	17 05	0 15818	+49 9	19 55	0 25772	+23 8
60	7911	44 8	10	798	7 9	60	4543	35 5	10	16067	49 7	60	5889	23 0
65	7688	44 4	15	761	6 9	65	47 2	36	15	16315	49 5	65	6002	2 3
70	7467	43 9	20	7 9	5 9	70	4905	36 9	20	16562	49 4	70	6112	21 4
75	7 49	43 4	25	7	5 0	75	5 91	37 5	25	168 9	49	75	26 16	0 3
9 80	0 7033	-43	12 30	0 00679	-4 1	14 80	05 80	+38 1	17 30	0 17 54	+48 9	19 80	0 6315	+19 5
85	6819	4 5	35	661	3 1	85	5472	38 7	35	17298	48 8	85	6411	18 7
90	6608	41 9	40	648	2	90	5667	39 3	40	1754	48 6	90	2650	17 8
95	640	41 4	45	639	1 3	95	5865	40 0	45	17784	48 3	95	26589	17 0
10 00	0 6194	-40 9	50	0 00635	-0 3	15 00	0 06067	+40 6	50	0 18025	+48 1	20 00	0 2667	+16

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

XXXII

Equation of Latitude

Argument N

1	2	3	1	2	3	1	2	3	1	2	3
N	Equation	$\Delta$	N	Equation	$\Delta$	N	Equation	$\Delta$	N	Equation	$\Delta$
d			d			d			d		
0.0	0.01680	- 55	5.0	0.00295	+ 17	10.0	0.02532	+ 45	15.0	0.02542	- 45
.1	1625	55	.1	313	19	.1	2576	43	.1	2497	46
.2	1570	55	.2	333	21	.2	2618	42	.2	2451	47
.3	1516	55	.3	355	23	.3	2659	41	.3	2404	48
.4	1461	55	.4	379	25	.4	2699	39	.4	2356	49
.5	1407	54	.5	404	26	.5	2737	38	.5	2307	50
0.6	0.01353	- 54	5.6	0.00431	+ 28	10.6	0.02774	+ 36	15.6	0.02257	- 51
.7	1300	53	.7	460	30	.7	2809	35	.7	2206	51
.8	1248	52	.8	491	32	.8	2843	33	.8	2155	52
.9	1196	52	.9	523	33	.9	2875	32	.9	2103	53
1.0	1144	52	6.0	557	35	11.0	2906	30	16.0	2050	53
1.1	0.01093	- 51	6.1	0.00593	+ 37	11.1	0.02935	+ 28	16.1	0.01997	- 54
.2	1043	50	.2	631	38	.2	2962	26	.2	1943	55
.3	994	49	.3	669	39	.3	2987	25	.3	1888	55
.4	946	48	.4	709	41	.4	3011	23	.4	1834	54
.5	899	46	.5	750	42	.5	3032	20	.5	1780	55
1.6	0.00854	- 45	6.6	0.00793	+ 44	11.6	0.03051	+ 19	16.6	0.01725	- 55
.7	810	44	.7	837	45	.7	3069	17	.7	1670	55
.8	767	43	.8	882	46	.8	3084	14	.8	1616	55
.9	725	42	.9	928	47	.9	3097	12	.9	1561	55
2.0	684	40	7.0	975	48	12.0	3108	11	17.0	1507	54
2.1	0.00645	- 39	7.1	0.01023	+ 49	12.1	0.03118	+ 9	17.1	0.01453	- 55
.2	607	37	.2	1072	50	.2	3126	7	.2	1398	54
.3	571	36	.3	1122	51	.3	3131	5	.3	1345	53
.4	536	34	.4	1173	52	.4	3136	+ 2	.4	1292	53
.5	503	32	.5	1225	52	.5	3136	0	.5	1239	52
2.6	0.00472	- 31	7.6	0.01277	+ 53	12.6	0.03136	- 2	17.6	0.01188	- 52
.7	442	29	.7	1330	54	.7	3133	5	.7	1136	52
.8	414	27	.8	1384	54	.8	3127	7	.8	1085	51
.9	388	26	.9	1438	54	.9	3120	8	.9	1035	50
3.0	363	24	8.0	1492	54	13.0	3111	10	18.0	986	49
3.1	0.00340	- 22	8.1	0.01546	+ 55	13.1	0.03100	- 12	18.1	0.00938	- 47
.2	319	20	.2	1601	55	.2	3087	14	.2	892	46
.3	301	17	.3	1656	55	.3	3072	16	.3	847	45
.4	286	15	.4	1711	56	.4	3055	18	.4	802	44
.5	271	14	.5	1767	56	.5	3036	20	.5	759	42
3.6	0.00258	- 12	8.6	0.01822	+ 55	13.6	0.03015	- 22	18.6	0.00718	- 41
.7	248	10	.7	1876	54	.7	2992	24	.7	678	40
.8	239	8	.8	1930	54	.8	2967	26	.8	639	39
.9	232	6	.9	1984	54	.9	2941	27	.9	601	37
4.0	227	4	9.0	2038	54	14.0	2913	29	19.0	565	35
4.1	0.00225	- 2	9.1	0.02091	+ 53	14.1	0.02883	- 31	19.1	0.00531	- 34
.2	224	+ 1	.2	2143	52	.2	2852	32	.2	498	33
.3	226	3	.3	2195	52	.3	2819	34	.3	466	31
.4	229	5	.4	2246	51	.4	2784	36	.4	436	29
.5	235	7	.5	2296	50	.5	2747	38	.5	408	27
4.6	0.00243	+ 9	9.6	0.02345	+ 49	14.6	0.02708	- 39	19.6	0.00382	- 25
.7	253	11	.7	2393	48	.7	2669	40	.7	359	23
.8	265	13	.8	2440	47	.8	2628	42	.8	337	21
.9	279	15	.9	2486	46	.9	2586	43	.9	317	20
5.0	0.00295	+ 17	10.0	0.02532	+ 45	15.0	0.02542	- 45	20.0	0.00298	- 18

Applied Constant: +0.00680.

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Latitude

XXXIII

O	Equation	$\Delta$	O	Equation	$\Delta$
00	0 0	+ 8	100	00 099	- 7
2	35	8	102	86	6
4	5	8	4	74	6
6	68	8	6	62	6
8	284	8	8	5	5
10	99	8	110	42	5
12	0 0314	+ 7	112	0 00033	- 4
4	3 8	7	4	26	4
6	34	7	6	19	3
8	355	6	8	14	2
20	367	6	120	10	
22	0 00378	+ 6	122	0 00007	- 1
4	389	5	4	5	- 1
6	398	5	6	4	0
8	407	4	8	4	+ 1
30	414	4	130	6	1
32	0 004 1	+ 3	132	0 00009	+
4	4 6	3	4	13	2
6	431	2	6	18	3
8	434	1	8	25	4
40	435	+ 1	140	3	4
42	0 00436	0	142	0 00041	+ 5
4	435	1	4	50	5
6	434	1	6	61	6
8	431		8	7	6
50	4 6	3	150	84	6
52	0 004 1	- 3	152	0 00097	+ 7
4	415	4	4	111	7
6	4 7	4	6	125	7
8	399	5	8	140	8
60	389	5	160	155	8
62	0 00379	- 6	162	0 00171	+ 8
4	367	6	4	186	8
6	355	6	6	0	8
8	34	7	8	18	8
70	3 9	7	170	35	8
72	0 00314	- 8	172	0 00 51	+ 8
4	99	8	4	267	8
6	84	8	6	28	8
8	69	8	8	97	8
80	53	8	180	312	7
82	0 00 37	- 8	182	0 003 6	+ 7
4	1	8	4	34	7
6	05	8	6	353	7
8	189	8	8	366	6
90	173	8	190	377	6
92	0 00157	- 8	192	0 0388	+ 5
4	14	8	4	398	5
6	1 7	7	6	406	4
8	113	7	8	414	4
100	00 099	- 7	200	0 042	+ 3

Appl dC t t +

XXXIV

P	Equation
d	
00	0 00030
04	34
08	37
12	41
16	44
20	47
24	0 00049
28	51
32	53
36	54
40	55
44	0 00055
48	54
52	53
56	5
60	50
64	0 00047
68	44
72	41
76	38
80	34
84	0 00030
88	7
92	23
96	20
100	16
104	0 00013
108	11
112	9
116	7
120	6
124	0 00005
128	5
132	5
136	6
140	8
144	00010
148	1
152	15
156	18
160	2
164	0 000 6
168	29
172	33
176	37
180	40
184	0 00043
188	46
192	49
196	51
200	0 00053

C t t + ∞  
63

XXXV

Q	Equation
00	0 00040
04	45
08	49
12	53
16	57
20	61
24	0 00064
28	66
32	68
36	69
40	70
44	0 00070
48	70
52	68
56	66
60	63
64	0 00060
68	56
72	52
76	48
80	44
84	0 00039
88	35
92	30
96	6
100	
104	0 00019
108	16
112	13
116	1
120	10
124	0 00010
128	10
132	11
136	13
140	15
144	0 00018
148	21
152	25
156	9
160	33
164	0 00037
168	4
172	46
176	51
180	55
184	0 0 059
188	62
192	65
196	67
200	0 00069

C t t + ∞

XXXVI

R	Equation
d	
00	0 00030
04	26
08	21
12	17
16	14
20	1
24	0 00007
28	5
32	3
36	2
40	1
44	0 00001
48	2
52	3
56	5
60	7
64	0 00010
68	14
72	18
76	22
80	6
84	0 00030
88	35
92	39
96	43
100	47
104	0 00050
108	53
112	55
116	57
120	58
124	0 00059
128	59
132	58
136	57
140	55
144	0 00052
148	49
152	46
156	42
160	38
164	0 00034
168	29
172	25
176	21
180	17
184	0 00013
188	1
192	7
196	5
200	0 000 3

C t t + ∞

# SATELLITE IV

## Tables of Longitude, Latitude, and Radius Vector

### Equations of Latitude

#### XXXVII

#### Occultations and Transits

To correct for the Jovicentric Latitude of the Earth, the Satellite's Latitude as derived from Tables XXX-XXXVI must be supplemented by the term—

$$\pm \frac{.643593 R_1 \sin (\odot - \Omega) / \Delta}{(9.808611)} \quad \begin{cases} + \text{Oc.} \\ - \text{Tr.} \end{cases}$$

where  $R_1$ ,  $\Delta$  are the Geocentric Distances of the Sun and Jupiter respectively, and  $\Omega$  the Longitude of the Ascending Node of Jupiter's Orbit on the Ecliptic. For Occultations employ the natural sign, for Transits the reversed sign.

#### XXXVIII

#### Correction of Latitude for Shadows and Transits

1	2
Lat.	Correction.
0.5	- .00485
0.6	437
0.7	388
0.8	340
0.9	291
1.0	243
1.1	- .00194
1.2	146
1.3	97
1.4	- 49
1.5	0
1.6	+ .00049
1.7	97
1.8	146
1.9	194
2.0	243
2.1	+ .00291
2.2	340
2.3	388
2.4	437
2.5	+ .00485

This Correction to be applied to Latitude as derived from Tables XXX-XXXVI, before using as an Argument of Semi-duration for Shadows and Transits.

#### XXXIX

#### Angle above Jupiter's Orbit

1	2	3	4
Lat.	Angle	Lat.	$\Delta$
0.0	- 3.0496 +	3.0	2030
0.1	2.8466	2.9	2031
0.2	2.6435	2.8	2031
0.3	2.4404	2.7	2031
0.4	2.2373	2.6	2032
0.5	2.0341	2.5	2033
0.6	- 1.8308 +	2.4	2033
0.7	1.6275	2.3	2033
0.8	1.4242	2.2	2034
0.9	1.2208	2.1	2034
1.0	1.0175	2.0	2035
1.1	- 0.8139 +	1.9	2035
1.2	0.6105	1.8	2035
1.3	0.4070	1.7	2035
1.4	- 0.2035 +	1.6	2035
1.5	0.0000	1.5	2035

This Table shows the Angle of the Radius Vector of the Satellite above Jupiter's Orbit, which corresponds to the Latitude as derived from Tables XXX-XXXVI.

# SATELLITE IV

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## Tables

of the

Synodic Motion,

Duration of the Phenomena of Eclipse,  
Occultation, Transit and Shadow-Transit,

with

Equations for Reduction to the Middle,

Corrections for Jupiter's Phase,

and the

Light-Curve of Eclipse

# SATELLITE IV

## Tables of Synodic Motion

### XL

1	2	1	2	1	2	1	2	1	2
Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value	Angle	Syn. Value
° <b>0'000</b>	d 0'000000	° <b>0'020</b>	d 0'000931	° <b>0'040</b>	d 0'001862	° <b>0'060</b>	d 0'002792	° <b>0'080</b>	d 0'003723
<b>1</b>	47	<b>21</b>	977	<b>41</b>	1908	<b>61</b>	2839	<b>81</b>	3770
<b>2</b>	93	<b>22</b>	1024	<b>42</b>	1955	<b>62</b>	2885	<b>82</b>	3816
<b>3</b>	140	<b>23</b>	1070	<b>43</b>	2001	<b>63</b>	2932	<b>83</b>	3863
<b>4</b>	186	<b>24</b>	1117	<b>44</b>	2048	<b>64</b>	2978	<b>84</b>	3909
<b>5</b>	233	<b>25</b>	1163	<b>45</b>	2094	<b>65</b>	3025	<b>85</b>	3956
<b>0'006</b>	0'000279	<b>0'026</b>	0'001210	<b>0'046</b>	0'002141	<b>0'066</b>	0'003071	<b>0'086</b>	0'004002
<b>7</b>	326	<b>27</b>	1257	<b>47</b>	2187	<b>67</b>	3118	<b>87</b>	4049
<b>8</b>	372	<b>28</b>	1303	<b>48</b>	2234	<b>68</b>	3165	<b>88</b>	4095
<b>9</b>	419	<b>29</b>	1350	<b>49</b>	2280	<b>69</b>	3211	<b>89</b>	4142
<b>10</b>	465	<b>30</b>	1396	<b>50</b>	2327	<b>70</b>	3258	<b>90</b>	4188
<b>0'011</b>	0'000512	<b>0'031</b>	0'001443	<b>0'051</b>	0'002373	<b>0'071</b>	0'003304	<b>0'091</b>	0'004235
<b>12</b>	558	<b>32</b>	1489	<b>52</b>	2420	<b>72</b>	3351	<b>92</b>	4282
<b>13</b>	605	<b>33</b>	1536	<b>53</b>	2466	<b>73</b>	3397	<b>93</b>	4328
<b>14</b>	652	<b>34</b>	1582	<b>54</b>	2513	<b>74</b>	3444	<b>94</b>	4375
<b>15</b>	698	<b>35</b>	1629	<b>55</b>	2560	<b>75</b>	3490	<b>95</b>	4421
<b>0'016</b>	0'000745	<b>0'036</b>	0'001675	<b>0'056</b>	0'002606	<b>0'076</b>	0'003537	<b>0'096</b>	0'004468
<b>17</b>	791	<b>37</b>	1722	<b>57</b>	2653	<b>77</b>	3583	<b>97</b>	4514
<b>18</b>	838	<b>38</b>	1768	<b>58</b>	2699	<b>78</b>	3630	<b>98</b>	4561
<b>19</b>	884	<b>39</b>	1815	<b>59</b>	2746	<b>79</b>	3676	<b>99</b>	4607
<b>0'020</b>	0'000931	<b>0'040</b>	0'001862	<b>0'060</b>	0'002792	<b>0'080</b>	0'003723	<b>0'100</b>	0'004654

### XLI

1	2
Angle	Syn. Value
° <b>0'0</b>	d 0'000000
<b>1</b>	4654
<b>2</b>	9308
<b>3</b>	13961
<b>4</b>	18615
<b>5</b>	23269
<b>0'6</b>	0'027923
<b>7</b>	32576
<b>8</b>	37230
<b>9</b>	41884
<b>1'0</b>	0'046538

These Tables show the time occupied in describing any angle with the Mean Synodic Motion, and are to be used for converting into time the Complement, or excess of the longitude of Jupiter above that of the Satellite at the approximate time of conjunction given by Tables I-VIII.

To allow for the true Motion, increase the entry taken from column 2 by its product by the Variation as given by Tables XXVI-XXIX.

# SATELLITE IV

## Tables of the Phenomena

XLII

Correction of High Latitudes for Variation

V	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	Var
Lat	160 156 152	148 144 140	136 132 128	124 120 116	112 108 104	100 096 092	088 084 080	Lat
0 50	+770 +752 +733	+714 +695 +677	+658 +639 +6	+60 +581 +563	+544 +55 +505	+486 +468 +449	+429 +410 +390	0 50
52	+7 +705 +687	+669 +65 +634	+617 +599 +581	+564 +546 +59	+510 +492 +475	+456 +438 +421	+402 +385 +367	52
54	+674 +658 +641	+65 +609 +59	+576 +559 +543	+56 +509 +493	+477 +459 +443	+426 +49 +393	+376 +359 +343	54
56	+65 +610 +595	+580 +565 +549	+533 +518 +503	+488 +473 +457	+44 +46 +410	+395 +380 +364	+349 +333 +318	56
58	+575 +561 +547	+533 +519 +55	+491 +477 +464	+449 +435 +41	+406 +39 +379	+364 +350 +336	+321 +307 +29	58
60	+54 +511 +499	+486 +474 +461	+448 +435 +4	+410 +396 +384	+371 +358 +345	+33 +319 +306	+293 +280 +266	60
0 62	+47 +461 +45	+439 +46 +415	+404 +393 +38	+369 +358 +347	+334 +323 +311	+300 +288 +276	+265 +252 +241	0 62
64	+420 +41 +40	+389 +379 +369	+360 +350 +339	+39 +318 +308	+298 +87 +77	+66 +256 +45	+35 +4 +15	64
66	+367 +358 +349	+340 +33 +323	+313 +305 +96	+287 +278 +7	+26 +251 +4	+33 +4 +15	+206 +197 +187	66
68	+31 +305 +97	+90 +8 +74	+67 +6 +252	+45 +237 +9	+2 +14 +07	+199 +191 +183	+175 +168 +160	68
70	+57 +250 +44	+38 +3 +226	+2 +213 +08	+01 +195 +188	+183 +177 +170	+163 +157 +151	+145 +138 +131	70
0 72	+ +194 +190	+186 +181 +176	+171 +167 +161	+157 +153 +147	+14 +138 +13	+18 +123 +118	+113 +108 +103	0 72
74	+14 +138 +135	+131 +18 +15	+12 +119 +115	+11 +108 +105	+10 +98 +95	+91 +88 +84	+80 +78 +74	74
76	+8 +80 +78	+77 +74 +73	+71 +69 +67	+65 +63 +61	+60 +58 +55	+54 +52 +49	+48 +46 +43	76
78	+0 +21 +2	+0 +19 +	+19 +18 +18	+18 +18 +17	+16 +17 +16	+15 +15 +14	+14 +13 +13	78
80	-43 -41 -40	-38 -38 -37	-35 -34 -33	-31 -30 -29	-28 -27 -26	-4 -3 -2	-22 -20 -19	80
0 82	-17 -104 -101	-98 -96 -9	-9 -87 -85	-81 -79 -76	-74 -70 -68	-65 -63 -59	-57 -54 -5	0 82
84	-174 -169 -164	-160 -156 -15	-147 -14 -138	-134 -19 -15	-10 -116 -111	-107 -103 -98	-94 -90 -85	84
86	-4 -236 -3	-24 -17 -11	-05 -199 -193	-186 -18 -174	-169 -163 -157	-151 -144 -138	-132 -16 -120	86
88	-314 -35 -297	-89 -8 -74	-266 -258 -5	-243 -34 -226	-218 -211 -03	-195 -187 -180	-172 -164 -156	88
90	-387 -376 -367	-357 -347 -338	-38 -318 -309	-99 -89 -80	-27 -260 -251	-41 -23 -22	-212 -203 -193	90
0 92	-46 -45 -440	-49 -417 -405	-394 -382 -371	-359 -347 -336	-324 -313 -301	-89 -278 -266	-55 -244 -232	0 92
94	-542 -529 -516	-50 -489 -475	-461 -448 -435	-41 -408 -394	-380 -367 -353	-339 -37 -313	-99 -286 -272	94
0 96	-66 -610 -594	-578 -563 -548	-53 -517 -501	-485 -470 -455	-439 -423 -407	39 -377 -361	-345 -330 -314	0 96

XLII continued

V r	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	Var
Lat	080 076 072	068 064 060	056 052 048	044 040 036	032 028 024	020 016 012	008 004 000	Lat
0 50	+390 +37 +35	+333 +313 +94	+74 +256 +36	+16 +197 +177	+157 +138 +118	+99 +79 +59	+40 +20 0	0 50
52	+367 +348 +331	+31 +95 +75	+257 +40 +1	+3 +185 +166	+148 +129 +111	+93 +74 +56	+37 +19 0	52
54	+343 +35 +309	+91 +275 +58	+40 +24 +06	+189 +173 +155	+138 +121 +104	+87 +69 +52	+35 +17 0	54
56	+318 +31 +86	+70 +55 +239	+3 +08 +191	+175 +16 +144	+18 +11 +97	+81 +64 +48	+3 +16 0	56
58	+9 +78 +263	+50 +35 +0	+206 +191 +176	+162 +148 +133	+118 +103 +89	+74 +59 +45	+30 +15 0	58
60	+266 +254 +4	+8 +14 +21	+188 +174 +161	+148 +135 +121	+107 +94 +81	+68 +54 +41	+7 +13 0	60
0 62	+41 +9 +17	+205 +193 +181	+170 +157 +145	+134 +12 +109	+97 +85 +74	+61 +49 +37	+25 +12 0	0 62
64	+15 +04 +194	+183 +172 +16	+151 +140 +19	+119 +108 +97	+86 +75 +66	+55 +44 +33	+22 +11 0	64
66	+187 +178 +169	+160 +150 +14	+13 +1 +114	+14 +95 +85	+75 +67 +57	+48 +38 +29	+19 +10 0	66
68	+160 +15 +144	+136 +19 +11	+113 +14 +97	+89 +81 +73	+64 +57 +49	+41 +33 +5	+16 +8 0	68
70	+13 +16 +119	+11 +16 +100	+93 +86 +80	+73 +67 +60	+53 +47 +41	+34 +27 +20	+14 +7 0	70
0 72	+103 +98 +93	+88 +83 +78	+7 +68 +63	+58 +52 +47	+42 +37 +3	+27 +21 +16	+11 +5 0	0 72
74	+74 +70 +67	+63 +59 +56	+52 +49 +45	+41 +37 +34	+31 +7 +3	+19 +15 +1	+8 +4 0	74
76	+43 +4 +40	+37 +35 +33	+31 +29 +7	+5 +22 +0	+19 +16 +14	+12 +9 +7	+5 +2 0	76
78	+13 +1 +1	+11 +10 +10	+1 +9 +8	+7 +7 +7	+6 +5 +5	+4 +3 +	+2 +1 0	78
80	-19 -18 -17	-16 -15 -14	-13 -11 -1	-10 -9 -8	-7 -6 -5	-4 -3 -3	-2 -1 0	80
0 82	-5 -49 -47	-43 -41 -38	-36 -34 -31	-8 -5 -22	-20 -17 -15	-12 -10 -7	-5 -2 0	0 82
84	-85 -81 -76	-72 -68 -64	-60 -55 -51	-46 -42 -38	-34 -29 -25	-21 -17 -13	-8 -4 0	84
86	-10 -114 -108	-10 -96 -90	-84 -77 -7	-66 -59 -54	-48 -42 -36	-30 -24 -18	-12 -6 0	86
88	-156 -49 -141	-13 -14 -116	-19 -11 -9	-85 -78 -70	-62 -54 -47	-39 -31 -3	-16 -8 0	88
90	-193 -183 -174	-164 -154 -145	-135 -15 -116	-106 -96 -87	-77 -67 -58	-48 -39 -29	-19 -10 0	90
0 92	-32 -1 -09	-197 -186 -174	-163 -151 -139	-18 -116 -14	-93 -81 -7	58 -46 -35	-23 -12 0	0 92
94	-27 -58 -245	-31 -17 -04	-191 -178 -164	-150 -137 -123	-109 -95 -8	-68 -55 -41	-27 -14 0	94
0 96	-314 -99 -82	-67 -252 -36	-20 -4 -188	-174 -158 -142	-16 -111 -95	-79 -63 -47	-32 -16 0	0 96

Th T bl mpl m t yt T bl XLVI d ppl

Th it qual oooo



# SATELLITE IV

## Tables of the Phenomena

XLII continued

Correction of High Latitudes for Variation

Var.	+0 +0 +0			+0 +0 +0			+0 +0 +0			+0 +0 +0			+0 +0 +0			+0 +0 +0			+0 +0 +0			Var.
Lat.	000	004	008	012	016	020	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	Lat.
0.50	0	-20	-40	-59	-79	-99	-120	-140	-159	-179	-199	-220	-240	-260	-280	-300	-321	-341	-362	-382	-402	0.50
.52	0	-19	-37	-56	-74	-93	-113	-131	-150	-168	-187	-207	-225	-244	-263	-283	-301	-320	-339	-358	-377	.52
.54	0	-17	-35	-52	-69	-87	-104	-123	-140	-157	-175	-193	-210	-228	-246	-264	-281	-299	-317	-335	-353	.54
.56	0	-16	-32	-48	-64	-81	-97	-114	-130	-146	-162	-179	-195	-212	-229	-245	-261	-278	-294	-311	-328	.56
.58	0	-15	-30	-45	-59	-74	-89	-105	-120	-135	-150	-164	-180	-195	-210	-226	-241	-256	-271	-286	-302	.58
.60	0	-13	-27	-41	-54	-68	-81	-96	-109	-123	-137	-150	-165	-178	-192	-207	-220	-234	-248	-262	-276	.60
0.62	0	-12	-25	-37	-49	-61	-74	-87	-99	-111	-124	-136	-149	-161	-174	-187	-199	-211	-225	-237	-249	0.62
.64	0	-11	-22	-33	-44	-55	-66	-77	-88	-99	-110	-121	-133	-144	-155	-166	-178	-189	-200	-212	-223	.64
.66	0	-10	-19	-29	-38	-48	-57	-67	-77	-87	-97	-106	-116	-126	-136	-146	-156	-166	-175	-186	-195	.66
.68	0	-8	-16	-25	-33	-41	-49	-57	-66	-75	-83	-91	-99	-108	-117	-125	-133	-142	-150	-158	-168	.68
.70	0	-7	-14	-20	-27	-34	-41	-47	-55	-62	-69	-75	-82	-90	-97	-104	-110	-118	-125	-132	-139	.70
0.72	0	-5	-11	-16	-21	-27	-32	-37	-44	-49	-54	-60	-65	-70	-76	-82	-87	-92	-99	-104	-109	0.72
.74	0	-4	-8	-12	-15	-19	-23	-27	-31	-36	-39	-43	-47	-51	-56	-60	-63	-67	-71	-76	-80	.74
.76	0	-2	-5	-7	-9	-12	-14	-16	-19	-22	-24	-27	-29	-31	-33	-37	-39	-41	-44	-46	-49	.76
.78	0	-1	-2	-2	-3	-4	-5	-5	-6	-7	-9	-9	-10	-11	-12	-12	-14	-15	-16	-16	-17	.78
.80	0	+1	+2	+3	+3	+4	+5	+6	+7	+8	+7	+8	+9	+10	+11	+12	+13	+12	+13	+14	+15	.80
0.82	0	+2	+5	+7	+10	+12	+15	+17	+20	+22	+25	+26	+29	+32	+34	+36	+39	+41	+43	+45	+48	0.82
.84	0	+4	+8	+13	+17	+21	+25	+29	+34	+38	+42	+46	+49	+53	+58	+62	+66	+70	+74	+79	+83	.84
.86	0	+6	+12	+18	+24	+30	+36	+42	+48	+54	+59	+66	+72	+77	+82	+88	+94	+100	+106	+112	+118	.86
.88	0	+8	+16	+23	+31	+39	+47	+54	+62	+70	+78	+85	+93	+101	+109	+116	+124	+132	+139	+147	+154	.88
.90	0	+10	+19	+29	+39	+48	+58	+67	+77	+87	+96	+106	+116	+125	+135	+145	+154	+164	+174	+183	+193	.90
0.92	0	+12	+23	+35	+46	+58	+70	+81	+93	+104	+116	+128	+139	+151	+163	+174	+186	+197	+209	+221	+232	0.92
.94	0	+14	+27	+41	+55	+68	+82	+95	+109	+123	+137	+150	+164	+178	+191	+206	+219	+233	+247	+260	+274	.94
0.96	0	+16	+32	+47	+63	+79	+95	+111	+126	+142	+158	+174	+190	+206	+222	+238	+254	+269	+286	+301	+318	0.96

XLII continued

Var.	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	Var.	
Lat.	080	084	088	092	096	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160	Lat.
0.50	-402	-422	-443	-463	-484	-504	-525	-545	-566	-587	-607	-628	-648	-669	-690	-711	-731	-752	-773	-794	-816	0.50
.52	-377	-397	-416	-435	-454	-474	-493	-512	-532	-551	-570	-590	-609	-629	-649	-668	-688	-707	-727	-747	-766	.52
.54	-353	-371	-388	-407	-425	-442	-461	-479	-497	-515	-533	-552	-569	-587	-606	-624	-643	-661	-679	-698	-716	.54
.56	-328	-345	-361	-378	-394	-411	-428	-444	-462	-479	-495	-512	-529	-546	-563	-579	-597	-614	-631	-648	-665	.56
.58	-302	-317	-333	-348	-364	-380	-395	-410	-426	-441	-457	-473	-488	-503	-519	-535	-551	-567	-583	-599	-613	.58
.60	-276	-290	-305	-318	-333	-346	-361	-374	-389	-404	-418	-432	-446	-461	-474	-489	-504	-518	-533	-547	-562	.60
0.62	-249	-262	-275	-288	-300	-314	-327	-339	-352	-365	-378	-391	-403	-417	-430	-443	-456	-469	-482	-495	-508	0.62
.64	-223	-234	-245	-257	-268	-280	-291	-303	-314	-326	-338	-349	-361	-372	-384	-395	-407	-419	-430	-442	-454	.64
.66	-195	-205	-216	-225	-236	-245	-256	-265	-276	-286	-296	-307	-316	-327	-337	-347	-358	-368	-379	-388	-399	.66
.68	-168	-176	-185	-193	-201	-211	-219	-228	-236	-245	-253	-263	-272	-280	-289	-298	-306	-316	-325	-333	-342	.68
.70	-139	-146	-153	-161	-167	-175	-182	-189	-197	-204	-211	-219	-226	-233	-240	-248	-256	-262	-270	-278	-285	.70
0.72	-109	-116	-121	-126	-133	-138	-144	-150	-156	-161	-167	-173	-179	-185	-191	-196	-203	-208	-214	-220	-226	0.72
.74	-80	-84	-88	-92	-96	-101	-105	-110	-114	-117	-122	-126	-131	-135	-140	-143	-148	-153	-157	-162	-166	.74
.76	-49	-52	-54	-57	-60	-62	-65	-68	-70	-73	-75	-79	-81	-83	-87	-89	-92	-95	-98	-100	-104	.76
.78	-17	-19	-20	-20	-21	-23	-24	-25	-26	-27	-28	-30	-30	-32	-33	-34	-35	-36	-38	-39	-40	.78
.80	+15	+16	+16	+16	+17	+18	+18	+19	+20	+19	+20	+21	+21	+22	+23	+23	+23	+24	+24	+25	+25	.80
0.82	+48	+50	+53	+55	+57	+59	+62	+64	+66	+68	+71	+73	+75	+77	+80	+82	+84	+86	+89	+90	+93	0.82
.84	+83	+86	+90	+94	+99	+103	+107	+110	+114	+119	+123	+126	+130	+134	+139	+142	+146	+150	+154	+157	+162	.84
.86	+118	+124	+130	+136	+142	+147	+153	+159	+165	+170	+176	+182	+187	+193	+199	+205	+211	+216	+222	+228	+234	.86
.88	+154	+162	+170	+178	+185	+193	+201	+209	+216	+224	+232	+239	+246	+254	+262	+270	+278	+285	+293	+301	+308	.88
.90	+193	+203	+212	+222	+232	+241	+251	+260	+270	+280	+289	+299	+309	+318	+328	+338	+347	+357	+367	+376	+385	.90
0.92	+232	+244	+255	+268	+280	+291	+303	+315	+326	+338	+349	+361	+373	+384	+396	+407	+419	+431	+442	+454	+466	0.92
.94	+274	+288	+301	+315	+329	+343	+357	+371	+384	+398	+412	+425	+439	+454	+467	+481	+495	+508	+522	+537	+550	.94
0.96	+318	+334	+349	+365	+381	+398	+413	+429	+445	+461	+478	+493	+509	+525	+542	+558	+573	+590	+606	+622	+638	0.96

This Table is complementary to Table XLVI and supplies a correction to Latitude.

The unit equals 0.00001.

# SATELLITE IV

## Tables of the Phenomena

XLII continued

Correction of High Latitudes for Variation

V	-0 -0 -0	-0 -0 -0	-0 -0 -0	-0 -0 -0	-0 -0 -0	-0 -0 -0	-0 -0 -0	Var
Lat	160 156 152	148 144 140	136 132 128	124 120 116	112 108 104	100 096 092	088 084 080	Lat
2 50	-77 75 -733	-714 -695 -677	-658 -639 -60	-60 -581 -563	-544 -525 -505	-486 -468 -449	-429 -410 -39	2 50
48	-7 -7 5 -687	669 -65 -634	-617 -599 -581	-564 546 59	-51 -49 -475	-456 -438 -41	-40 -385 -367	48
46	-674 -658 -641	65 -69 -59	-576 -559 -543	-56 -59 -493	-477 -459 -443	-46 -409 -393	-376 -359 -343	46
44	-65 -610 -595	-580 565 -549	-533 518 -503	-488 -473 -457	-44 -46 -41	-395 -380 -364	-349 -333 -318	44
42	-575 -561 -541	-533 -519 505	-491 -477 -464	-449 -435 -41	-406 -39 -379	-364 -350 -336	-31 -307 -29	42
40	-54 -51 -499	-486 -474 461	-448 -435 -4	-410 -396 -384	-371 -358 -345	-332 -319 -36	-293 -80 266	40
2 38	47 -161 -45	-439 -46 415	-44 -393 -381	-369 -358 -347	334 -33 -311	-30 -88 76	-65 -252 -41	2 38
36	-4 -41 -400	-389 -379 -369	-360 -350 -339	39 -318 -308	-98 -87 -277	-66 -56 -45	-35 -24 -15	36
34	-367 -358 -349	-340 -332 -33	-313 -35 -296	-87 -78 -7	-6 -51 -4	233 -4 -15	-26 -197 -187	34
32	-31 -35 -97	-9 -82 -74	-67 -60 -52	-45 -37 29	-214 -207	-199 -191 -183	-175 -168 -16	32
30	-57 -50 -44	-38 -3 -6	-20 -213 -08	-21 -195 -188	-183 -177 -17	-163 -157 -151	-145 -138 -131	30
2 28	-200 -194 -19	-186 -181 -176	-171 -167 -161	-157 -153 147	-142 -138 -132	-18 -13 -118	-113 -108 -103	2 28
26	-14 -138 -135	-13 -18 -15	-12 -119 -115	-11 -108 -105	-10 -98 -95	-91 -88 -84	-80 -78 -74	26
24	-8 -80 78	-77 -74 -73	-71 -69 -67	-65 -63 -61	-60 -58 -55	-54 -5 -49	-48 -46 -43	24
22	-0 -1 -0	-0 -19 -0	-19 -18 -18	-18 -18 -17	-16 -17 -16	-15 -15 -14	-14 -13 -13	22
20	+43 +41 +4	+38 +38 +37	+35 +34 +33	+31 +30 +29	+9 +7 +26	+24 +23 +	+2 +20 +19	20
2 18	+17 +104 +1	+98 +96 +9	+90 +87 +85	+81 +79 +76	+74 +7 +68	+65 +63 +59	+57 +54 +52	2 18
16	+174 +169 +164	+160 +156 +15	+147 +14 +138	+134 +12 +115	+10 +116 +111	+107 +103 +98	+94 +90 +85	16
14	+4 +36 +3	+4 +17 +11	+05 +109 +103	+186 +180 +174	+169 +163 +157	+151 +144 +138	+13 +126 +120	14
12	+314 +35 +97	+89 +8 +74	+66 +58 +250	+243 +234 +226	+18 +211 +203	+195 +187 +180	+17 +164 +156	12
10	+387 +376 +367	+357 +347 +338	+38 +318 +309	+299 +89 +80	+270 +60 +251	+241 +232 +22	+212 +203 +193	10
2 08	+462 +452 +44	+49 +417 +405	+394 +382 +371	+359 +347 +336	+324 +313 +301	+289 +78 +266	+255 +244 +232	2 08
06	+54 +59 +516	+502 +489 +475	+461 +448 +435	+41 +408 +394	+380 +367 +353	+339 +37 +313	+299 +286 +272	06
2 04	+66 +610 +594	+578 +563 +548	+53 +517 +501	+485 +470 +455	+439 +43 +407	+392 +377 +361	+345 +330 +314	2 04

XLII continued

V r	-0 -0 -0	-0 -0 -0	-0 -0 -0	-0 -0 -0	-0 -0 -0	-0 -0 -0	-0 -0 -0	Var
Lat	080 076 072	068 064 060	056 052 048	044 040 036	032 028 024	020 016 012	008 004 000	Lat
2 50	-39 37 -352	-333 -313 -94	-74 -56 -36	-216 -197 -177	-157 -138 -118	-99 -79 -59	-40 -20 0	2 50
48	-36 -348 -331	31 -95 75	-257 -40 -1	-203 -185 -166	-148 -129 -111	-93 -74 -56	-37 -19 0	48
46	-343 -35 -39	-91 -75 -58	-40 -24 -06	-189 -173 -155	-138 -121 -104	-87 -69 -52	-35 -17 0	46
44	-318 -301 -286	-7 -55 -39	-3 -28 -191	-175 -160 -144	-118 -112 -97	-81 -64 -48	-32 -16 0	44
42	-9 -278 -63	-50 -35 -0	-06 -191 -176	-162 -148 -133	-118 -103 -89	-74 -59 -45	-30 -15 0	42
40	-66 54 -24	-8 -214 -01	-188 -174 -161	-148 -135 -11	-107 -94 -81	-68 -54 -41	-27 -13 0	40
2 38	-241 -9 -17	-205 -193 -181	-170 -157 -145	-134 -12 -109	-97 -85 -74	-61 -49 -37	-25 -12 0	2 38
36	-215 -24 -194	-183 -17 -16	-151 -140 -129	-119 -18 -97	-86 -75 -66	-55 -44 -33	-22 -11 0	36
34	-187 -178 -169	-160 -150 -142	-13 12 -114	-14 -95 -85	-75 -67 -57	-48 -38 -9	-19 -10 0	34
32	-160 -152 -144	-136 -19 -11	-113 -104 -97	-89 -81 -73	-64 -57 -49	-41 -33 -25	-16 -8 0	32
30	131 -16 -119	-112 -106 -100	-93 -86 -80	-73 -67 -60	-53 -47 -41	-34 -27 -20	-14 -7 0	30
2 28	-103 -98 -93	-88 -83 -78	-72 -68 -63	-58 -52 -47	-4 -37 -32	-27 -21 -16	-11 -5 0	2 28
26	-74 -70 -67	-63 -59 -56	-5 -49 -45	-41 -37 -34	-31 -27 -3	-19 -15 -12	-8 -4 0	26
24	-43 -42 -40	-37 -35 -33	-31 -29 -7	-5 -	-20 -19 -16 -14	-1 -9 -7	-5 -2 0	24
22	-13 -1 -1	-11 -10 -	-10 -9 -8	-7 -7 -7	-6 -5 -5	-4 -3 -	-2 -1 0	22
20	+19 +18 +17	+16 +15 +14	+13 +11 +11	+10 +9 +8	+7 +6 +5	+4 +3 +3	+2 +1 0	20
2 18	+52 +49 +47	+43 +41 +38	+36 +34 +31	+28 +25 +2	+0 +17 +15	+1 +10 +7	+5 + 0	2 18
16	+85 +81 +76	+72 +68 +64	+60 +55 +51	+46 +42 +38	+34 +29 +5	+1 +17 +13	+8 +4 0	16
14	+10 +114 +108	+10 +96 +90	+84 +77 +7	+66 +59 +54	+48 +4 +36	+30 +24 +18	+12 +6 0	14
12	+156 +149 +141	+132 +124 +116	+109 +11 +9	+85 +78 +70	+6 +54 +47	+39 +31 +3	+16 +8 0	12
10	+193 +183 +174	+164 +154 +145	+135 +115 +116	+106 +96 +87	+77 +67 +58	+48 +39 +9	+19 +10 0	10
2 08	+23 +1 +209	+197 +186 +174	+163 +151 +139	+118 +116 +114	+93 +81 +7	+58 +46 +35	+3 +12 0	2 08
06	+72 +258 +45	+31 +17 +04	+191 +178 +164	+15 +137 +13	+109 +95 +82	+68 +55 +41	+27 +14 0	06
2 04	+314 +299 +8	+67 +252 +236	+0 +204 +188	+174 +158 +142	+116 +111 +95	+79 +63 +47	+3 +16 0	2 04

Th Tbl i mpl m t yt Tbl XLVI l ppl

Th it q l oooo

# SATELLITE IV

## Tables of the Phenomena

XLII continued

Correction of High Latitude for Variation

Var.	+0 +0 +0			+0 +0 +0			+0 +0 +0			+0 +0 +0			+0 +0 +0			+0 +0 +0			+0 +0 +0			Var.		
Lat.	000	004	008	012	016	020	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	Lat.		
2°50	0	+	20	+	40	+	59	+	79	+	99	+	120	+	140	+	159	+	179	+	199	+	220	2°50
48	0	+	19	+	37	+	56	+	74	+	93	+	113	+	131	+	150	+	168	+	187	+	207	48
46	0	+	17	+	35	+	52	+	69	+	87	+	104	+	123	+	140	+	157	+	175	+	193	46
44	0	+	16	+	32	+	48	+	64	+	81	+	97	+	114	+	130	+	146	+	162	+	179	44
42	0	+	15	+	30	+	45	+	59	+	74	+	89	+	105	+	120	+	135	+	150	+	164	42
40	0	+	13	+	27	+	41	+	54	+	68	+	81	+	96	+	109	+	123	+	137	+	150	40
2°38	0	+	12	+	25	+	37	+	49	+	61	+	74	+	87	+	99	+	111	+	124	+	136	2°38
36	0	+	11	+	22	+	33	+	44	+	55	+	66	+	77	+	88	+	99	+	110	+	121	36
34	0	+	10	+	19	+	29	+	38	+	48	+	57	+	67	+	77	+	87	+	97	+	106	34
32	0	+	8	+	16	+	25	+	33	+	41	+	49	+	57	+	66	+	75	+	83	+	91	32
30	0	+	7	+	14	+	20	+	27	+	34	+	41	+	47	+	55	+	62	+	69	+	75	30
2°28	0	+	5	+	11	+	16	+	21	+	27	+	32	+	37	+	44	+	49	+	54	+	60	2°28
26	0	+	4	+	8	+	12	+	15	+	19	+	23	+	27	+	31	+	36	+	39	+	43	26
24	0	+	2	+	5	+	7	+	9	+	12	+	14	+	16	+	19	+	22	+	24	+	27	24
22	0	+	1	+	2	+	2	+	3	+	4	+	5	+	5	+	6	+	7	+	9	+	9	22
20	0	-	1	-	2	-	3	-	3	-	4	-	5	-	6	-	7	-	8	-	7	-	8	20
2°18	0	-	2	-	5	-	7	-	10	-	12	-	15	-	17	-	20	-	22	-	25	-	26	2°18
16	0	-	4	-	8	-	13	-	17	-	21	-	25	-	29	-	34	-	38	-	42	-	46	16
14	0	-	6	-	12	-	18	-	24	-	30	-	36	-	42	-	48	-	54	-	59	-	66	14
12	0	-	8	-	16	-	23	-	31	-	39	-	47	-	54	-	62	-	70	-	78	-	85	12
10	0	-	10	-	19	-	29	-	39	-	48	-	58	-	67	-	77	-	87	-	96	-	106	10
2°08	0	-	12	-	23	-	35	-	46	-	58	-	70	-	81	-	93	-	104	-	116	-	128	2°08
06	0	-	14	-	27	-	41	-	55	-	68	-	82	-	95	-	109	-	123	-	137	-	150	06
2°04	0	-	16	-	32	-	47	-	63	-	79	-	95	-	111	-	126	-	142	-	158	-	174	2°04

XLII continued

Var.	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	Var.	
Lat.	080	084	088	092	096	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160	Lat.
2°50	+402	+422	+443	+463	+484	+504	+525	+545	+566	+587	+607	+628	+648	+669	+690	+711	+731	+752	+773	+794	+816	2°50
48	+377	+397	+416	+435	+454	+474	+493	+512	+532	+551	+570	+590	+609	+629	+649	+668	+688	+707	+727	+747	+766	48
46	+353	+371	+388	+407	+425	+442	+461	+479	+497	+515	+533	+552	+569	+587	+606	+624	+643	+661	+679	+698	+716	46
44	+328	+345	+361	+378	+394	+411	+428	+444	+462	+479	+495	+512	+529	+546	+563	+579	+597	+614	+631	+648	+665	44
42	+302	+317	+333	+348	+364	+380	+395	+410	+426	+441	+457	+473	+488	+503	+519	+535	+551	+567	+583	+599	+613	42
40	+276	+290	+305	+318	+333	+346	+361	+374	+389	+404	+418	+432	+446	+461	+474	+489	+504	+518	+533	+547	+562	40
2°38	+249	+262	+275	+288	+300	+314	+327	+339	+352	+365	+378	+391	+403	+417	+430	+443	+456	+469	+482	+495	+508	2°38
36	+223	+234	+245	+257	+268	+280	+291	+303	+314	+326	+338	+349	+361	+372	+384	+395	+407	+419	+430	+442	+454	36
34	+195	+205	+216	+225	+236	+245	+256	+265	+276	+286	+296	+307	+316	+327	+337	+347	+358	+368	+379	+388	+399	34
32	+168	+176	+185	+193	+201	+211	+219	+228	+236	+245	+253	+263	+272	+280	+289	+298	+306	+316	+325	+333	+342	32
30	+139	+146	+153	+161	+167	+175	+182	+189	+197	+204	+211	+219	+226	+233	+240	+248	+256	+262	+270	+278	+285	30
2°28	+109	+116	+121	+126	+133	+138	+144	+150	+156	+161	+167	+173	+179	+185	+191	+196	+203	+208	+214	+220	+226	2°28
26	+80	+84	+88	+92	+96	+101	+105	+110	+114	+117	+122	+126	+131	+135	+140	+143	+148	+153	+157	+162	+166	26
24	+49	+52	+54	+57	+60	+62	+65	+68	+70	+73	+75	+79	+81	+83	+87	+89	+92	+95	+98	+100	+104	24
22	+17	+19	+20	+20	+21	+23	+24	+25	+26	+27	+28	+30	+30	+32	+33	+34	+35	+36	+38	+39	+40	22
20	-15	-16	-16	-16	-17	-18	-18	-19	-20	-19	-20	-21	-21	-22	-23	-23	-23	-24	-24	-25	-25	20
2°18	-48	-50	-53	-55	-57	-59	-62	-64	-66	-68	-71	-73	-75	-77	-80	-82	-84	-86	-89	-90	-93	2°18
16	-83	-86	-90	-94	-99	-103	-107	-110	-114	-119	-123	-126	-130	-134	-139	-142	-146	-150	-154	-157	-162	16
14	-118	-124	-130	-136	-142	-147	-153	-159	-165	-170	-176	-182	-187	-193	-199	-205	-211	-216	-222	-228	-234	14
12	-154	-162	-170	-178	-185	-193	-201	-209	-216	-224	-232	-239	-246	-254	-262	-270	-278	-285	-293	-301	-308	12
10	-193	-203	-212	-222	-232	-241	-251	-260	-270	-280	-289	-299	-309	-318	-328	-338	-347	-357	-367	-376	-385	10
2°08	-232	-244	-255	-268	-280	-291	-303	-315	-326	-338	-349	-361	-373	-384	-396	-407	-419	-431	-442	-454	-466	2°08
06	-274	-288	-301	-315	-329	-343	-357	-371	-384	-398	-412	-425	-439	-454	-467	-481	-495	-508	-522	-537	-550	06
2°04	-318	-334	-349	-365	-381	-398	-413	-429	-445	-461	-478	-493	-509	-525	-542	-558	-573	-590	-606	-622	-638	2°04

This Table is complementary to Table XLVI and supplies a correction to Latitude.

The unit equals 0.00001.

# SATELLITE IV

## Tables of the Phenomena

XLIII

Correction of High Latitudes

Ecl, Oc

<b>J</b> <b>M</b>	<b>0<sup>d</sup></b>	<b>1<sup>d</sup></b>	<b>2<sup>d</sup></b>	<b>3<sup>d</sup></b>	<b>4<sup>d</sup></b>	<b>5<sup>d</sup></b>	<b>6<sup>l</sup></b>	<b>7<sup>d</sup></b>	<b>8<sup>d</sup></b>	<b>9<sup>d</sup></b>	<b>10<sup>d</sup></b>	<b>11<sup>d</sup></b>	<b>12<sup>d</sup></b>	<b>13<sup>d</sup></b>	<b>14<sup>d</sup></b>	<b>15<sup>d</sup></b>	<b>16<sup>d</sup></b>	<b>17<sup>l</sup></b>	<b>18<sup>l</sup></b>	<b>19<sup>d</sup></b>	<b>20<sup>d</sup></b>
<b>08</b>			-44	-44	-43	-40	-37			*		*		*		*	*		*	-45	-44
<b>10</b>	-48	-51	-52	-52	-50	-47	-43	-38	-3	*	*		*	*		*	*	-49	-52	-52	-51
<b>12</b>	-55	-58	-59	-58	-56	-52	-47	-4	-35	-31	-6	*	*		*	-45	-52	-55	-58	-59	-57
<b>14</b>	-60	-6	-63	-62	-59	-55	-50	-45	-39	-33	-9	-8	-30	-35	-43	-50	-56	-61	-63	-63	-61
<b>16</b>	-63	-66	-66	-65	-6	-58	-53	-47	-41	-36	-32	31	-34	-39	-46	-54	-60	-64	-66	-66	-64
<b>18</b>	-65	-68	-68	-67	-63	-59	-54	-48	4	-37	-33	-33	-36	-41	-48	-56	-6	-66	-68	-68	-66
<b>20</b>	-66	-69	-69	-67	-64	-59	-54	-48	-4	-37	-34	-34	-37	-42	-49	-57	-63	-67	-69	-68	-66
<b>22</b>	-65	-67	-68	*		*	-5	-46	-41	-36	-33	-33	-36	-42	-49	-56	-62	-66	-67	-67	*
<b>24</b>	-63						*	*	-40	-35	-33	-3	-35	-41	-48	-54	-60	-64	*	*	*
<b>26</b>	*				*	*	*	*		-33	-31	-31	-33	-39	-45	-51	-57	*	*	*	*
<b>28</b>	*				*		*	*	*		-9	-9	-31	-36	-42	-48	*	*		*	*
<b>56</b>					*	*		*		*	-51	-45	-38	-33	-31	-31	*	*	*	*	*
<b>58</b>	*			*		*		*		-58	-53	-46	-40	-34	-3	-32	-34	*	*	*	*
<b>60</b>	-38	-44			*			*	-66	-61	-55	-48	-42	-36	-33	-33	-35	-40	-45	*	*
<b>62</b>	-39	-45	-51	*		*	*	-68	-65	-6	-56	-49	-4	-37	-34	-34	-36	-41	-47	*	*
<b>64</b>	-40	-46	-5	-57	62	-66	-68	-69	-67	-63	-57	-50	-42	-37	-34	-34	-37	-42	-47	-54	-59
<b>66</b>	-40	-46	-5	-57	-6	-66	-68	-68	-66	-62	-56	-48	-41	-35	-33	-33	-37	-4	-48	-54	-59
<b>68</b>	-39	-45	-51	-56	-60	-64	-66	-66	-63	-59	-53	-46	-38	-33	-31	-32	-35	-41	-46	-52	-58
<b>70</b>	-37	-42	-48	-53	-57	-60	-62	-62	-60	-56	-50	-42	-35	-30	-28	-29	-33	-38	-44	-50	-54
<b>72</b>	-33	-39	-44	-49	-53	-55	-57	-56	-54	-50	-44	*	*	*		-25	-29	-35	-41	-46	-50
<b>74</b>	-9	-35	-4	-44	-47	-49	-50	-49	-48	*		*	*	*	*		*	31	-37	-41	-45
<b>76</b>		*	-34	-38	-41	-42	-4	-42	*		*	*	*	*	*	*	*	*	*	-36	-39
<b>92</b>			*	*	*		*	*		+45	+47	+47	+46	+44	+41	+36	+31	*	*	*	*
<b>94</b>	+31	+5			*	*		*	+49	+52	+54	+54	+52	+50	+46	+41	+35	+29	+24	*	*
<b>96</b>	+34	+9	+6	+25	+8	+26	+41	+48	+54	+57	+59	+59	+57	+54	+49	+44	+38	+33	+8	+5	+25
<b>98</b>	+38	+3	+30	+9	+33	+39	+46	+53	+59	+63	+64	+63	+61	+58	+53	+48	+4	+36	+31	+29	+30
<b>100</b>	+40	+35	+32	+33	+36	+43	+50	+57	+63	+66	+67	+67	+64	+60	+55	+50	+44	+38	+34	+32	+33
<b>102</b>	+41	+39	+36	+36	+39	+45	+52	+58	+64	+67	+68	+68	+66	+62	+58	+5	+47	+41	+38	+36	+37
<b>104</b>	+40	+36	+34	+35	+39	+45	+52	+59	+64	+68	+69	+68	+65	+61	+55	+49	+44	+38	+35	+34	+36
<b>106</b>	+39	+35	+33	+34	+38	+44	+51	+58	+63	+66	+67		*	*	*	+48	+43	+38	+34	+33	+35
<b>108</b>	+38	+33	+32	+33	+37	+4	+49	+56	+61	+64	*	*	*	*	*	*	+41	+36	+33	+32	+34
<b>110</b>	*	+31	+30	+31	+34	+40	+47	+53	*	*	*		*	*	*	*	*	+34	+31	+30	+32
<b>112</b>			+8	+9	+32	+37	+43	*		*	*	*	*	*	*	*	*	*	+29	+28	+30
<b>138</b>			+45	+39	+33	+29	+28	*	*		*		*	*	*		*	*		+43	+37
<b>140</b>		+54	+48	+42	+36	+3	+30	+31	*	*	*		*	*		*	*		+52	+46	+40
<b>142</b>	+62	+57	+51	+44	+38	+34	+32	+32	+35	+40	*			*		*		+61	+56	+49	+4
<b>144</b>	+64	+60	+53	+46	+40	+35	+3	+34	+37	+42	+47	*	*		*	+67	+66	+63	+58	+51	+44
<b>146</b>	+65	+61	+54	+47	+40	+35	+33	+34	+38	+43	+49	+55	+60	+65	+67	+69	+68	+64	+59	+52	+45
<b>148</b>	+66	+61	+54	+47	+40	+35	+34	+35	+38	+44	+50	+56	+61	+65	+68	+69	+68	+64	+59	+5	+44
<b>150</b>	+64	+59	+53	+45	+38	+33	+3	+33	+38	+43	+49	+55	+60	+64	+6	+68	+66	+63	+57	+50	+43
<b>152</b>	+6	+57	+5	+43	+35	+31	+30	+32	+36	+4	+48	+53	+58	+62	+64	+65	+64	+60	+55	+48	+40
<b>154</b>	+57	+5	+45	+38	+31	+27	+27	+29	+34	+40	+46	+51	+55	+59	+60	+61	+6	+56	+50	+43	+36
<b>156</b>	+51	+46		*		*		+25	+31	+36	+42	+47	+51	+53	+55	+55	+53	+50	*	*	*
<b>158</b>	*			*	*	*		*	*	+32	+37	+41	+45	+47	+48	+48	+46	*	*	*	*
<b>176</b>			49	-48	-49	-44	-40	*	*		*		*	*	*		*		*	-49	-48
<b>178</b>	-52	-55	-56	-55	-53	-50	-45	-40	-34	*		*	*	*				-52	-55	-56	-54
<b>180</b>	-58	-61	-62	-59	-58	-53	-48	-44	-37	-32	-28		*	*		-48	-54	-58	-61	-61	-63

N t t h b ppl d Th it q l ooo Thi T bl i mplim t y to T bl XLVII Wh th L tit d d i d f m T bl  
 XXX-XXXVIII b tw d 95 b tw 5 d it ppl q t whi h m t b ppl d to it b f it i d gum t f T bl XLV

# SATELLITE IV

## Tables of the Phenomena

XLIV

Correction of High Latitudes

Sh., Tr.

$\begin{matrix} M \\ J \end{matrix}$	0 <sup>d</sup>	1 <sup>d</sup>	2 <sup>d</sup>	3 <sup>d</sup>	4 <sup>d</sup>	5 <sup>d</sup>	6 <sup>d</sup>	7 <sup>d</sup>	8 <sup>d</sup>	9 <sup>d</sup>	10 <sup>d</sup>	11 <sup>d</sup>	12 <sup>d</sup>	13 <sup>d</sup>	14 <sup>d</sup>	15 <sup>d</sup>	16 <sup>d</sup>	17 <sup>d</sup>	18 <sup>d</sup>	19 <sup>d</sup>	20 <sup>d</sup>
0 <sup>8</sup>	*	*	+15	+7	0	+7	+13	*	*	*	*	*	*	*	*	*	*	*	*	+11	+6
1 <sup>0</sup>	+9	-3	-11	-16	-17	-15	-9	0	+12	*	*	*	*	*	*	*	*	+5	-6	-13	-16
1 <sup>2</sup>	-15	-25	-31	-34	-34	-31	-24	-16	-5	+5	+16	*	*	*	*	+6	-8	-18	-27	-33	-34
1 <sup>4</sup>	-33	-40	-46	-47	-45	-41	-36	-28	-19	-8	0	+6	+8	+4	-5	-15	-26	-36	-43	-46	-47
1 <sup>6</sup>	-46	-52	-56	-57	-55	-51	-45	-37	-28	-20	-12	-8	-8	-12	-20	-30	-40	-48	-54	-57	-57
1 <sup>8</sup>	-55	-61	-64	-64	-61	-57	-51	-43	-35	-27	-21	-18	-19	-22	-32	-41	-50	-57	-62	-64	-64
2 <sup>0</sup>	-61	-67	-69	-68	-65	-60	-54	-47	-39	-32	-27	-25	-26	-31	-40	-48	-56	-63	-67	-68	-67
2 <sup>2</sup>	-64	-68	-70	*	*	*	-54	-47	-41	-34	-29	-28	-30	-36	-43	-52	-60	-65	-68	-70	*
2 <sup>4</sup>	-64	*	*	*	*	*	*	*	-41	-35	-32	-30	-32	-38	-46	-52	-60	-66	*	*	*
2 <sup>6</sup>	*	*	*	*	*	*	*	*	*	-34	-31	-31	-32	-38	-44	-51	-58	*	*	*	*
2 <sup>8</sup>	*	*	*	*	*	*	*	*	*	*	-30	-30	-31	-36	-43	-49	*	*	*	*	*
5 <sup>6</sup>	*	*	*	*	*	*	*	*	*	*	-52	-45	-38	-33	-31	-32	*	*	*	*	*
5 <sup>8</sup>	*	*	*	*	*	*	*	*	*	-59	-53	-45	-39	-33	-31	-32	-35	*	*	*	*
6 <sup>0</sup>	-38	-46	*	*	*	*	*	*	-67	-60	-53	-45	-38	-32	-30	-31	-35	-41	-47	*	*
6 <sup>2</sup>	-41	-45	-52	*	*	*	*	-69	-64	-59	-51	-42	-35	-30	-28	-29	-33	-40	-47	*	*
6 <sup>4</sup>	-33	-43	-51	-57	-62	-66	-67	-66	-62	-55	-47	-38	-29	-25	-23	-25	-31	-38	-45	-54	-60
6 <sup>6</sup>	-31	-39	-47	-53	-60	-62	-63	-60	-55	-48	-39	-29	-21	-16	-16	-19	-26	-33	-42	-50	-55
6 <sup>8</sup>	-23	-32	-41	-47	-52	-55	-55	-52	-45	-44	-27	-17	-8	-4	-7	-10	-17	-26	-34	-42	-50
7 <sup>0</sup>	-13	-22	-31	-37	-42	-44	-43	-37	-32	-22	-11	0	+8	+12	+10	+4	-6	-15	-25	-33	-39
7 <sup>2</sup>	+3	-9	-17	-24	-29	-29	-28	-21	-13	-1	+12	*	*	*	*	+22	+11	-1	-12	-20	-24
7 <sup>4</sup>	+23	+9	-1	-7	-11	-11	-7	-1	+12	*	*	*	*	*	*	*	*	+18	+5	-3	-9
7 <sup>6</sup>	*	*	+23	+15	+11	+14	+20	+15	*	*	*	*	*	*	*	*	*	*	*	+19	+14
9 <sup>2</sup>	*	*	*	*	*	*	*	*	*	-22	-10	-2	+1	+1	-3	-13	-24	*	*	*	*
9 <sup>4</sup>	-11	-25	*	*	*	*	*	*	-5	+6	+15	+21	+22	+21	+16	+8	-3	-15	-19	*	*
9 <sup>6</sup>	+5	-5	-15	-21	-22	-15	-8	+4	+16	+26	+33	+37	+37	+35	+29	+22	+12	+3	-8	-18	-22
9 <sup>8</sup>	+19	+9	+2	-3	-2	+4	+12	+23	+33	+42	+47	+50	+49	+47	+41	+34	+25	+16	+6	0	-3
10 <sup>0</sup>	+28	+20	+14	+12	+13	+19	+27	+37	+47	+54	+58	+60	+59	+55	+49	+42	+34	+25	+18	+13	+12
10 <sup>2</sup>	+34	+30	+24	+22	+24	+29	+37	+46	+55	+61	+64	+66	+65	+61	+56	+49	+42	+34	+28	+24	+23
10 <sup>4</sup>	+38	+31	+27	+27	+29	+35	+43	+52	+59	+66	+69	+69	+67	+63	+56	+49	+42	+35	+29	+27	+27
10 <sup>6</sup>	+39	+33	+30	+30	+33	+39	+47	+55	+62	+67	+69	*	*	*	*	+50	+44	+37	+32	+29	+30
10 <sup>8</sup>	+39	+33	+31	+31	+35	+40	+47	+56	+62	+67	*	*	*	*	*	*	+43	+37	+33	+31	+32
11 <sup>0</sup>	*	+33	+30	+31	+33	+40	+47	+54	*	*	*	*	*	*	*	*	*	+36	+32	+30	+32
11 <sup>2</sup>	*	*	+29	+30	+32	+38	+44	*	*	*	*	*	*	*	*	*	*	*	+30	+32	+31
13 <sup>8</sup>	*	*	+46	+40	+34	+30	+29	*	*	*	*	*	*	*	*	*	*	*	*	+44	+38
14 <sup>0</sup>	*	+56	+49	+41	+36	+32	+30	+30	*	*	*	*	*	*	*	*	*	*	+53	+46	+40
14 <sup>2</sup>	+64	+57	+50	+42	+36	+32	+31	+32	+34	+42	*	*	*	*	*	*	*	+62	+56	+48	+40
14 <sup>4</sup>	+64	+58	+49	+41	+35	+31	+29	+32	+36	+43	+49	*	*	*	*	+70	+67	+62	+56	+47	+39
14 <sup>6</sup>	+62	+56	+47	+39	+31	+27	+26	+29	+35	+42	+49	+56	+62	+68	+69	+69	+66	+60	+53	+44	+36
14 <sup>8</sup>	+58	+51	+41	+33	+25	+21	+22	+26	+31	+39	+47	+55	+61	+65	+67	+66	+62	+55	+48	+39	+30
15 <sup>0</sup>	+50	+42	+33	+23	+16	+12	+14	+18	+26	+34	+42	+50	+56	+59	+61	+60	+55	+48	+39	+29	+21
15 <sup>2</sup>	+40	+30	+19	+10	+2	0	+2	+9	+17	+26	+35	+42	+48	+52	+52	+50	+45	+36	+27	+15	+7
15 <sup>4</sup>	+24	+12	0	-10	-17	-18	-13	-6	+5	+16	+25	+33	+38	+41	+40	+37	+29	+21	+9	-3	-12
15 <sup>6</sup>	+2	-11	*	*	*	*	*	-25	-11	0	+11	+19	+24	+25	+24	+19	+10	-1	*	*	*
15 <sup>8</sup>	*	*	*	*	*	*	*	*	*	-20	-8	0	+5	+5	+2	-5	-16	*	*	*	*
17 <sup>6</sup>	*	*	+2	-5	-9	-4	+2	*	*	*	*	*	*	*	*	*	*	*	*	-1	-5
17 <sup>8</sup>	-3	-14	-21	-25	-26	-23	-17	-8	+4	*	*	*	*	*	*	*	*	-7	-17	-23	-26
18 <sup>0</sup>	-24	-33	-39	-41	-40	-36	-30	-22	-12	-2	+8	*	*	*	*	-5	-17	-27	-35	-40	-41

No constant has been applied.

The unit equals 0°0000.

This Table is complementary to Table XLVIII.

When the Latitude as derived from

Tables XXX—XXXVIII lies between 0°50 and 0°95 or between 2°50 and 2°95, it supplies an equation which must be applied to it before it is used as argument of Table XLVa.

# SATELLITE IV

## Tables of the Phenomena

XLVa

Semiduration

Argument Latitude

Lat	Semi duration	3 Δ oor	4 Δ <sup>2</sup> Sh Tr	5 Co r Sh Tr	6 L t	Lat	Sem du at on	3 Δ o	4 Corr Sh T	5 Lat	Lat	S mi duratio	3 Δ oor	4 Cor Sh Tr	5 Lat
0 500	d				2 500	0 600	0 044199	1	- 13	2 400	0 700	0 06 84	135 2	- 94	2 300
0 502	0064 1	2 66	471	- 31	2 498	0 602	44615	07	15	2 398	0 705	61512	133 0	297	2 295
504	905	1171	77	44	2 496	604	450 5	204	17	2 396	710	6 17	130 6	3 0	2 290
506	1 84	935	40	54	2 494	606	45432		19	2 394	715	6 818	128 5	303	2 285
508	1 793	8 4	6	6	2 492	608	45835	00	1	2 392	720	63457	126 6	307	2 280
510	14298	715	19	69	2 490	610	46 33	198	23	2 390	725	64 84	1 4 4	310	2 275
0 512	0 015654	651	14	- 76	2 488	0 612	0 0466 7	196	- 225	2 388	0 730	0 64701	12 3	- 313	2 270
514	169	6	11	82	2 486	614	47017	194	7	2 386	735	653 7	1 5	315	2 265
516	18 60	561	9	87	2 484	616	474 3	19	2 9	2 384	740	65906	118 7	318	2 260
518	19145	5 8	8	9	2 482	618	47785	190	231	2 382	745	66494	116 8	321	2 255
520	17	5 1	6	98	2 480	620	4816	188	33	2 380	750	6 074	115 0	3 4	2 250
0 522	0 01148	477	6	- 1	2 478	0 622	0 048535	186	- 34	2 378	0 755	0 067644	113	- 327	2 245
524	2 78	455	5	107	2 476	624	48906	185	36	2 376	760	68 06	111 6	3 9	2 240
526	968	436	5	111	2 474	626	49 73	183	38	2 374	765	68760	110 0	33	2 235
528	38	419	4	115	2 472	628	49637	181	240	2 372	770	69306	108 3	335	2 230
530	4645	405	3	119	2 470	630	49997	179	4	2 370	775	69843	106 8	337	2 225
0 532	0 025441	392	3	- 123	2 468	0 632	0 5035	177	- 43	2 368	0 780	0 070374	105 4	- 340	2 220
534	6211	379	3	1 7	2 466	634	5 705	176	45	2 366	785	70897	103 7	342	2 215
536	6958	368	3	13	2 464	636	51054	174	47	2 364	790	71411	102 1	345	2 210
538	7683	358	3	134	2 462	638	51401	173	48	2 362	795	71918	100 9	347	2 205
540	28388	348		137	2 460	640	51744	171	250	2 360	800	72420	99 5	350	2 200
0 542	0 029074	339		- 141	2 458	0 642	0 05 085	170	- 252	2 358	0 805	0 72913	97 8	- 35	2 195
544	9743	331	2	143	2 456	644	5 423	168	53	2 356	810	73398	96 6	355	2 190
546	3 397	323		147	2 454	646	5 757	166	55	2 354	815	73879	95 5	357	2 185
548	31035	315		150	2 452	648	53 88	165	56	2 352	820	74353	94 1	359	2 180
550	31658	3 9	2	153	2 450	650	53418	164	58	2 350	825	7482	92 8	361	2 175
0 552	0 3 69	30		- 156	2 448	0 652	0 53743	16	- 59	2 348	0 830	0 75 81	91 5	- 364	2 170
554	3 866	96	1	159	2 446	654	54066	161	61	2 346	835	75735	90 3	366	2 165
556	33453	291	1	162	2 444	656	54387	160	263	2 344	840	76184	89 1	368	2 160
558	340 9	285	1	164	2 442	658	54705	158	64	2 342	845	76626	88 0	370	2 155
560	34592	79	1	167	2 440	660	550 0	157	66	2 340	850	77064	86 9	372	2 150
0 562	0 035145	75	1	- 170	2 438	0 662	0 5533	156	- 267	2 338	0 855	0 077495	85 6	- 374	2 145
564	35690	7	1	17	2 436	664	55643	155	269	2 336	860	77920	84 4	376	2 140
566	362 6	65	1	175	2 434	666	55951	153	70	2 334	865	78339	83 3	378	2 135
568	36751	61	1	178	2 432	668	56 56	152	72	2 332	870	78753	82 2	381	2 130
570	37268	256	1	180	2 430	670	56559	151	273	2 330	875	79161	81 3	383	2 125
0 572	0 037776	53	1	- 183	2 428	0 672	0 056860	150	- 2 5	2 328	0 880	0 079566	80	- 384	2 120
574	38 78	49	1	185	2 426	674	57158	149	76	2 326	885	79963	79 0	386	2 115
576	3877	46	1	187	2 424	676	57454	148	278	2 324	890	8 356	78 0	388	2 110
578	39 60	24	1	190	2 422	678	57748	146	279	2 322	895	80743	77 0	390	2 105
580	39739	238	1	192	2 420	680	5804	145	280	2 320	900	811 6	76 1	392	2 100
0 582	0 040 1	35	1	- 194	2 418	0 682	0 0583 9	144	- 282	2 318	0 905	0 081504	75 1	- 394	2 095
584	40678	3	1	197	2 416	684	58617	143	83	2 316	910	81877	74 1	396	2 090
586	41138	29	1	199	2 414	686	5890	14	84	2 314	915	82 45	73 2	397	2 085
588	4159	6	1	1	2 412	688	59185	141	86	2 312	920	8 609	7 2	399	2 080
590	4 04	3	1	03	2 410	690	59466	140	87	2 310	925	82967	71 3	401	2 075
0 592	04 48	20	1	- 2 5	2 408	0 692	0 059746	139	- 88	2 308	0 930	0 083322	7 4	- 402	2 070
594	4 919	17	1	07	2 406	694	600 3	138	29	2 306	935	83671	69 5	4 4	2 065
596	43350	14	1	210	2 404	696	60298	137	91	2 304	940	84 17	68 6	406	2 060
598	43776	1	1	21	2 402	698	60571	136	293	2 302	945	84357	67 7	408	2 055
0 600	0 04199	210	1	- 13	2 400	0 700	0 060842	135	- 94	2 300	0 950	084694	66 8	- 409	2 050

Appl dC t t oooo Th Argum t f T bl XLV i th L it d d i d m I bl XXX XXXVIII t d by th  
q f T bl XLIV TI t y m t b f t l r r t d by th q t l f T bl XLIX LI F Sh d w d T t th  
f m l m i th t f J p t Ph f m T bl LXI must l s b p p l d

# SATELLITE IV

## Tables of the Phenomena

**XLVb**

**Semiduration**

1	2	3	4	5
Lat.	Semi-duration.	$\Delta$ 0.001	Corr. <sup>n</sup> Sh., Tr.	Lat.
<b>0.950</b>	<sup>a</sup> 0.083704	66,8	-409	<b>2.050</b>
<b>0.955</b>	84035	65,9	411	<b>2.045</b>
<b>0.960</b>	84363	65,1	412	<b>2.040</b>
<b>0.965</b>	84686	64,2	414	<b>2.035</b>
<b>0.970</b>	85005	63,3	415	<b>2.030</b>
<b>0.975</b>	85319	62,6	417	<b>2.025</b>
<b>0.980</b>	0.085631	61,8	-418	<b>2.020</b>
<b>0.985</b>	85937	60,8	420	<b>2.015</b>
<b>0.990</b>	86239	59,9	421	<b>2.010</b>
<b>0.995</b>	86538	59,5	423	<b>2.005</b>
<b>1.000</b>	86834	58,6	424	<b>2.000</b>
<b>1.005</b>	0.087124	57,7	-426	<b>1.995</b>
<b>1.010</b>	87411	57,0	427	<b>1.990</b>
<b>1.015</b>	87694	56,3	428	<b>1.985</b>
<b>1.020</b>	87974	55,5	430	<b>1.980</b>
<b>1.025</b>	88249	54,7	431	<b>1.975</b>
<b>1.030</b>	0.088521	54,0	-432	<b>1.970</b>
<b>1.035</b>	88789	53,3	434	<b>1.965</b>
<b>1.040</b>	89054	52,5	435	<b>1.960</b>
<b>1.045</b>	89314	51,8	436	<b>1.955</b>
<b>1.050</b>	89572	51,1	438	<b>1.950</b>
<b>1.055</b>	0.089825	50,4	-439	<b>1.945</b>
<b>1.060</b>	90076	49,7	440	<b>1.940</b>
<b>1.065</b>	90322	49,0	441	<b>1.935</b>
<b>1.070</b>	90566	48,3	442	<b>1.930</b>
<b>1.075</b>	90805	47,6	443	<b>1.925</b>
<b>1.080</b>	0.091042	47,0	-444	<b>1.920</b>
<b>1.085</b>	91275	46,2	446	<b>1.915</b>
<b>1.090</b>	91504	45,6	447	<b>1.910</b>
<b>1.095</b>	91731	45,0	448	<b>1.905</b>
<b>1.100</b>	91954	44,2	449	<b>1.900</b>
<b>1.105</b>	0.092173	43,6	-450	<b>1.895</b>
<b>1.110</b>	92390	43,0	451	<b>1.890</b>
<b>1.115</b>	92603	42,3	452	<b>1.885</b>
<b>1.120</b>	92813	41,7	453	<b>1.880</b>
<b>1.125</b>	93020	41,0	454	<b>1.875</b>
<b>1.130</b>	0.093223	40,3	-455	<b>1.870</b>
<b>1.135</b>	93423	39,8	456	<b>1.865</b>
<b>1.140</b>	93621	39,2	457	<b>1.860</b>
<b>1.145</b>	93815	38,5	458	<b>1.855</b>
<b>1.150</b>	94006	37,8	459	<b>1.850</b>
<b>1.155</b>	0.094193	37,3	-460	<b>1.845</b>
<b>1.160</b>	94379	36,7	461	<b>1.840</b>
<b>1.165</b>	94560	36,0	462	<b>1.835</b>
<b>1.170</b>	94739	35,5	462	<b>1.830</b>
<b>1.175</b>	94915	34,9	463	<b>1.825</b>
<b>1.180</b>	0.095088	34,2	-464	<b>1.820</b>
<b>1.185</b>	95257	33,7	465	<b>1.815</b>
<b>1.190</b>	95425	33,1	466	<b>1.810</b>
<b>1.195</b>	95588	32,4	467	<b>1.805</b>
<b>1.200</b>	0.095749	31,9	-467	<b>1.800</b>

1	2	3	4	5
Lat.	Semi-duration.	$\Delta$ 0.001	Corr. <sup>n</sup> Sh., Tr.	Lat.
<b>1.200</b>	<sup>a</sup> 0.095749	31,9	-467	<b>1.800</b>
<b>1.205</b>	95907	31,4	468	<b>1.795</b>
<b>1.210</b>	96063	30,8	469	<b>1.790</b>
<b>1.215</b>	96215	30,1	470	<b>1.785</b>
<b>1.220</b>	96364	29,6	470	<b>1.780</b>
<b>1.225</b>	96511	29,0	471	<b>1.775</b>
<b>1.230</b>	0.096654	28,4	-472	<b>1.770</b>
<b>1.235</b>	96795	27,9	472	<b>1.765</b>
<b>1.240</b>	96933	27,3	473	<b>1.760</b>
<b>1.245</b>	97068	26,8	474	<b>1.755</b>
<b>1.250</b>	97201	26,2	474	<b>1.750</b>
<b>1.255</b>	0.097330	25,6	-475	<b>1.745</b>
<b>1.260</b>	97457	25,1	476	<b>1.740</b>
<b>1.265</b>	97581	24,5	476	<b>1.735</b>
<b>1.270</b>	97702	23,9	477	<b>1.730</b>
<b>1.275</b>	97820	23,4	477	<b>1.725</b>
<b>1.280</b>	0.097936	22,9	-478	<b>1.720</b>
<b>1.285</b>	98049	22,3	478	<b>1.715</b>
<b>1.290</b>	98159	21,7	479	<b>1.710</b>
<b>1.295</b>	98266	21,3	480	<b>1.705</b>
<b>1.300</b>	98372	20,7	480	<b>1.700</b>
<b>1.305</b>	0.098473	20,1	-481	<b>1.695</b>
<b>1.310</b>	98573	19,7	481	<b>1.690</b>
<b>1.315</b>	98670	19,2	482	<b>1.685</b>
<b>1.320</b>	98765	18,6	482	<b>1.680</b>
<b>1.325</b>	98856	18,0	483	<b>1.675</b>
<b>1.330</b>	0.098945	17,4	-483	<b>1.670</b>
<b>1.335</b>	99030	17,0	483	<b>1.665</b>
<b>1.340</b>	99115	16,5	483	<b>1.660</b>
<b>1.345</b>	99195	15,9	484	<b>1.655</b>
<b>1.350</b>	99274	15,4	484	<b>1.650</b>
<b>1.355</b>	0.099349	14,9	-484	<b>1.645</b>
<b>1.360</b>	99423	14,3	485	<b>1.640</b>
<b>1.365</b>	99492	13,7	485	<b>1.635</b>
<b>1.370</b>	99560	13,3	486	<b>1.630</b>
<b>1.375</b>	99625	12,8	486	<b>1.625</b>
<b>1.380</b>	0.099688	12,3	-486	<b>1.620</b>
<b>1.385</b>	99748	11,7	486	<b>1.615</b>
<b>1.390</b>	99805	11,3	487	<b>1.610</b>
<b>1.395</b>	99860	10,8	487	<b>1.605</b>
<b>1.400</b>	99913	10,2	487	<b>1.600</b>
<b>1.405</b>	0.099962	9,6	-488	<b>1.595</b>
<b>1.410</b>	1.00009	9,2	488	<b>1.590</b>
<b>1.415</b>	1.00054	8,6	488	<b>1.585</b>
<b>1.420</b>	1.00095	8,1	488	<b>1.580</b>
<b>1.425</b>	1.00135	7,6	488	<b>1.575</b>
<b>1.430</b>	0.100171	7,1	-489	<b>1.570</b>
<b>1.435</b>	1.00206	6,7	489	<b>1.565</b>
<b>1.440</b>	1.00238	6,1	489	<b>1.560</b>
<b>1.445</b>	1.00267	5,6	489	<b>1.555</b>
<b>1.450</b>	0.100294	5,1	-489	<b>1.550</b>

1	2	3	4	5
Lat.	Semi-duration.	$\Delta$ 0.001	Corr. <sup>n</sup> Sh., Tr.	Lat.
<b>1.450</b>	<sup>a</sup> 0.100294	5,1	-489	<b>1.550</b>
<b>1.455</b>	1.00318	4,6	489	<b>1.545</b>
<b>1.460</b>	1.00340	4,0	489	<b>1.540</b>
<b>1.465</b>	1.00358	3,5	490	<b>1.535</b>
<b>1.470</b>	1.00375	3,0	490	<b>1.530</b>
<b>1.475</b>	1.00388	2,6	490	<b>1.525</b>
<b>1.480</b>	0.100401	2,1	-490	<b>1.520</b>
<b>1.485</b>	1.00409	1,5	490	<b>1.515</b>
<b>1.490</b>	1.00416	1,0	490	<b>1.510</b>
<b>1.495</b>	1.00419	0,5	490	<b>1.505</b>
<b>1.500</b>	0.100421	0,0	-490	<b>1.500</b>

Added Constant: -0.001000. The Argument of Table XLVb is the Latitude as taken from Tables XXX-XXXVIII.

The entry must be corrected by the equations from Tables XLVI-LI. For Shadows and Transits the correction from column 4 must be applied, and also that for Jupiter's Phase from Table LXI.



# SATELLITE IV

## Tables of the Phenomena

XLVI

Equation of Semiduration

Va	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	- 0 - 0 - 0	Var
L t	160 156 152	148 144 140	136 132 128	124 120 116	112 108 104	100 096 092	088 084 080	Lat	
0 90	614 6 1 6 8	635 64 649	657 664 671	678 685 69	7 707 714	7 1 728 735	74 75 757	2 10	
0 92	57 580 588	597 605 613	6 1 6 9 638	646 654 66	670 679 687	695 7 3 711	720 728 736	2 08	
0 94	533 541 550	560 569 578	587 596 606	615 6 4 633	64 65 661	670 679 688	698 707 716	2 06	
0 96	495 505 515	526 536 546	556 566 576	586 596 607	617 6 7 637	647 657 667	677 687 698	2 04	
0 98	460 471 482	493 5 4 515	5 6 537 548	559 57 581	59 6 3 614	6 5 636 647	658 669 68	2 02	
1 00	4 7 439 451	463 475 486	498 510 5	534 516 557	569 581 593	605 616 6 8	64 65 663	2 00	
1 02	397 409 4 2	435 447 46	473 485 498	510 5 3 535	548 560 573	586 598 611	6 3 636 648	1 98	
1 04	368 381 395	408 4 435	448 461 475	488 50 514	5 8 541 555	568 581 594	607 621 634	1 96	
1 06	341 355 369	383 397 411	4 5 439 453	467 481 495	501 523 537	551 564 579	592 607 6 0	1 94	
1 08	316 33 345	360 375 389	404 418 433	447 46 476	491 5 6 5 1	535 549 564	578 593 608	1 92	
1 10	9 307 3 3	338 353 368	384 398 414	4 9 444 459	475 490 505	5 0 535 551	565 581 596	1 90	
1 12	70 286 302	317 333 349	365 380 396	412 4 8 443	459 475 491	506 522 538	553 569 585	1 88	
1 14	5 66 28	98 315 331	347 363 38	396 412 428	445 461 478	493 509 526	542 559 574	1 86	
1 16	3 47 64	280 297 313	331 347 364	381 398 414	431 448 465	481 498 515	531 548 565	1 84	
1 18	1 9 46	63 81 98	315 332 35	367 384 4 1	419 435 453	470 487 504	5 1 539 556	1 82	
1 20	196 13 31	48 66 283	301 319 337	354 372 389	407 4 4 44	460 477 495	512 530 547	1 80	
1 22	181 198 17	234 53 27	89 306 3 5	34 361 378	397 414 433	450 468 486	504 52 540	1 78	
1 24	166 184 2 3	21 40 58	76 94 313	331 350 368	387 405 423	441 459 478	496 515 533	1 76	
1 26	154 17 191	209 9 247	266 84 303	3 341 359	378 396 415	434 452 471	489 508 5 6	1 74	
1 28	14 160 180	198 18 236	56 74 93	31 331 35	369 388 4 7	426 444 464	48 50 5 0	1 72	
1 30	131 15 169	188 208 227	46 65 85	304 3 3 34	36 381 40	419 438 458	477 496 515	1 70	
1 32	1 1 14 160	179 199 18	38 57 77	96 316 335	355 374 394	413 432 45	471 491 510	1 68	
1 34	114 133 153	172 19 1	3 251 271	290 311 330	350 369 389	408 428 448	467 487 506	1 66	
1 36	106 1 5 145	165 185 5	5 44 65	284 304 3 4	344 364 381	403 423 444	463 483 502	1 64	
1 38	99 119 139	159 179 199	19 39 259	79 300 319	340 359 38	399 419 439	459 479 499	1 62	
1 40	93 113 134	153 174 194	14 234 55	75 95 315	336 355 376	396 415 436	456 476 496	1 60	
1 42	89 109 130	150 17 190	211 231 25	27 29 312	333 353 373	393 413 434	454 474 494	1 58	
1 44	85 105 126	146 167 187	07 7 48	68 89 3 9	330 350 371	391 410 431	451 472 492	1 56	
1 46	83 103 1 4	144 164 184	05 5 246	266 87 307	3 8 348 369	389 409 430	450 471 491	1 54	
1 48	81 101 1 2	142 163 183	204 4 245	65 86 306	3 7 347 368	388 408 4 9	449 470 490	1 52	
1 50	81 101 1	14 163 183	204 2 4 45	65 86 306	3 7 347 368	388 4 8 429	449 470 490	1 50	

Appli d C t t + Th t q l oo Thl T bl i mpl m t y t T bl XLVII  
It ppli t th S m d ti wh h ppl bl wl th L t t d d i d f m T bl XXX XXXVIII li b t 95 d 5



# SATELLITE IV

## Tables of the Phenomena

XLVI *continued*

Equation of Semiduration

Var. Lat.	- 0 - 0 - 0 080 076 072	- 0 - 0 - 0 068 064 060	- 0 - 0 - 0 056 052 048	- 0 - 0 - 0 044 040 036	- 0 - 0 - 0 032 028 024	- 0 - 0 - 0 020 016 012	- 0 - 0 - 0 008 004 000	Var. Lat.
0°90	757 764 771	778 785 793	800 807 814	821 828 836	843 850 857	864 871 879	886 893 900	2°10
0°92	736 744 752	761 769 777	785 793 802	810 818 826	834 843 851	859 867 875	884 892 900	2°08
0°94	716 725 734	744 753 762	771 780 790	799 808 817	826 836 845	854 863 872	882 891 900	2°06
0°96	698 708 718	728 738 748	758 768 779	789 799 809	819 829 839	849 860 870	880 890 900	2°04
0°98	680 691 702	713 724 735	746 757 768	779 790 801	812 823 834	845 856 867	878 889 900	2°02
1°00	663 676 687	699 711 723	735 747 758	770 782 794	805 817 829	841 853 865	876 888 900	2°00
1°02	648 661 673	686 699 712	724 737 749	762 774 787	799 812 824	837 850 863	875 888 900	1°98
1°04	634 648 661	674 687 701	714 727 740	754 767 781	794 807 820	834 847 860	873 887 900	1°96
1°06	620 635 648	663 676 691	704 719 732	747 760 775	788 802 816	830 844 858	872 886 900	1°94
1°08	608 623 637	652 666 681	695 710 725	740 754 769	783 798 812	827 842 857	871 886 900	1°92
1°10	596 611 626	642 657 672	687 703 717	733 748 763	778 794 809	824 839 855	870 885 900	1°90
1°12	585 601 616	632 648 664	679 695 711	727 742 759	774 790 805	822 837 853	868 885 900	1°88
1°14	574 591 607	624 640 656	672 689 705	721 737 754	770 786 802	819 835 852	867 884 900	1°86
1°16	565 582 598	615 632 649	665 682 699	716 732 749	766 783 799	817 833 850	866 884 900	1°84
1°18	556 573 590	608 624 642	659 677 693	711 728 745	762 780 797	814 831 849	866 883 900	1°82
1°20	547 565 583	601 618 636	653 671 688	706 724 742	759 777 794	812 829 848	865 883 900	1°80
1°22	540 558 576	594 612 630	648 666 684	702 720 738	756 774 792	810 828 846	864 882 900	1°78
1°24	533 551 569	588 606 625	643 662 680	698 716 735	753 772 790	809 827 845	863 882 900	1°76
1°26	526 546 564	583 601 620	639 658 676	695 713 732	751 770 788	807 825 844	863 882 900	1°74
1°28	520 540 558	578 596 616	634 654 672	692 710 730	748 768 786	806 824 844	862 881 900	1°72
1°30	515 535 554	573 592 612	631 650 669	689 708 727	746 766 785	804 823 843	862 881 900	1°70
1°32	510 530 549	569 588 608	627 647 666	686 705 725	744 764 783	803 822 842	861 881 900	1°68
1°34	506 527 546	566 585 605	624 645 664	684 703 723	743 763 782	802 821 841	861 881 900	1°66
1°36	502 523 542	562 582 602	622 642 661	682 701 722	741 761 781	801 820 841	860 881 900	1°64
1°38	499 520 539	560 579 600	619 640 659	680 700 720	740 760 780	800 820 840	860 880 900	1°62
1°40	496 517 537	557 577 598	617 638 658	678 698 719	738 759 779	800 819 840	860 880 900	1°60
1°42	494 515 535	555 575 596	616 637 656	677 697 718	738 758 778	799 819 840	859 880 900	1°58
1°44	492 513 533	554 574 595	614 635 655	676 696 717	737 758 778	799 818 839	859 880 900	1°56
1°46	491 512 532	553 573 594	614 635 654	675 695 716	736 757 777	798 818 839	859 880 900	1°54
1°48	490 511 531	552 572 593	613 634 654	675 695 716	736 757 777	798 818 839	859 880 900	1°52
1°50	490 511 531	552 572 593	613 634 654	675 695 716	736 757 777	798 818 839	859 880 900	1°50

Applied Constant: +900.

The unit equals 0<sup>d</sup>.000001.

This Table is complementary to Table XLII.

It supplies a correction to the Semiduration which is applicable when the Latitude as derived from Tables XXX-XXXVIII lies between 0°95 and 2°05.

# SATELLITE IV

## Tables of the Phenomena

XLVI continued

Equation of Semiduration

Var	0 + 0 + 0			+ 0 + 0 + 0			+ 0 + 0 + 0			+ 0 + 0 + 0			+ 0 + 0 + 0			+ 0 + 0 + 0			+ 0 + 0 + 0			Var
Lat	000	004	008	012	016	020	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	Lat
0 90	900	907	914	921	9 9	936	943	950	957	964	97	979	986	993	1000	1007	1015	102	1029	1036	1043	2 10
0 92	900	908	916	925	933	941	949	957	966	974	982	99	998	10 7	1015	10 3	1031	1039	1048	1056	1064	2 08
0 94	90	909	918	9 8	937	946	955	964	974	983	99	1 01	1010	10 0	10 9	1 38	1047	1056	1 66	1075	1084	2 06
0 96	9	910	9 0	930	940	951	961	971	981	991	1001	1 11	1 21	103	1042	105	1062	1 7	1082	1092	11 2	2 04
0 98	900	911	922	933	944	955	966	977	988	999	1010	1 1	1 3	1043	1054	1 65	1076	1087	1 98	11 9	11	2 02
1 00	900	912	9 4	935	947	959	971	983	995	10 6	1 18	1030	1 4	1053	1066	1077	1089	1101	1113	11 4	1137	2 00
1 02	900	91	9 5	937	95	963	976	988	1001	1013	10 6	1038	1051	1063	1076	1088	1101	1114	11 7	1139	1152	1 98
1 04	9	913	9 7	940	953	966	980	993	1006	1019	1033	1046	1060	1073	1086	1099	1113	1126	1139	115	1166	1 96
1 06	900	914	928	94	956	970	984	998	101	10 5	104	1053	1 68	1081	1096	1109	11 4	1137	115	1165	1180	1 94
1 08	900	914	929	943	958	973	988	100	1017	1031	1046	1060	1075	109	1105	1119	1134	1148	1163	1177	1192	1 92
1 10	9	915	930	945	961	976	991	1006	102	1037	105	1067	1083	1097	1113	11 8	1143	1158	1174	1189	1 04	1 90
1 12	9	915	932	947	963	978	995	1010	10 6	1041	1 58	1073	1089	1105	11 1	1136	1152	1168	1184	1199	1 15	1 88
1 14	900	916	933	948	965	981	998	1014	1030	1046	1063	1079	1095	1111	11 8	1144	1160	1176	1193	1209	1 26	1 86
1 16	900	916	934	950	967	983	1001	1017	1034	1051	1068	1084	1101	1118	1135	1151	1168	1185	1202	1218	1235	1 84
1 18	9 0	917	934	951	969	986	1003	10 0	1038	1 55	107	1089	1107	1123	1141	1158	1176	119	1210	1 7	1244	1 82
1 20	900	917	935	95	971	988	1006	10 3	1041	1058	1076	1094	111	1129	1147	1164	118	1199	1217	1235	1253	1 80
1 22	900	918	936	954	972	990	1008	1 26	1044	1062	1080	1098	1116	1134	1152	1170	1188	1206	1 24	124	1 60	1 78
1 24	9 0	918	937	955	973	991	1010	1 8	1047	1065	1084	1102	1120	1138	1157	1175	1194	1212	1 31	1249	1267	1 76
1 26	900	918	937	956	975	993	101	1030	1049	1 68	1087	1105	1124	114	1161	1180	1199	1217	1236	1 54	1 74	1 74
1 28	9	919	938	956	976	994	1 14	103	1052	1 7	1090	11 8	11 8	1146	1166	1184	1204	122	1 4	1260	1280	1 72
1 30	900	919	938	957	977	996	1015	1034	1054	1073	109	1111	1131	1150	1169	1188	1208	1227	1246	1265	1 85	1 70
1 32	9 0	919	939	958	978	997	1017	1036	1056	1 75	1095	1114	1134	1153	1173	1192	1212	1231	1251	1270	1290	1 68
1 34	900	919	939	959	979	998	1018	1 37	1 57	1 77	1097	1116	1136	1155	1176	1195	1215	1234	1254	1 73	1 94	1 66
1 36	90	919	94	959	98	999	1 19	1039	1 59	1078	1 99	1118	1139	1158	1178	1198	1 18	1238	1258	1277	1 98	1 64
1 38	900	92	940	960	980	100	10 0	1040	1060	1080	1100	1120	1141	1160	1181	1200	1221	1 40	1261	1280	1301	1 62
1 40	900	920	940	960	981	1000	10 1	1041	106	1 81	110	1122	1142	1162	1183	1202	12 3	1243	1 63	1283	1304	1 60
1 42	900	920	941	960	981	10 1	1 2	1042	106	1082	1103	1123	1144	1163	1184	1204	12 5	1 45	1265	1285	1306	1 58
1 44	900	9 0	941	961	98	1001	10	1 42	1 63	1 83	11 4	11 4	1145	1165	1186	1 05	1 26	1246	1267	1 87	1308	1 56
1 46	9 0	9 0	941	961	98	1 0	3	1 43	1064	1084	11 5	11 5	1146	1165	1186	1206	1 27	1 47	1 68	1 88	1309	1 54
1 48	900	920	941	961	98	10	1 3	1 43	1064	1084	1105	11 5	1146	1166	1187	1207	12 8	1248	1269	1289	1310	1 52
1 50	900	920	941	961	982	1002	10 3	1043	1064	1084	1105	1125	1146	1166	1187	1207	1228	1248	1 69	1289	1310	1 50

Appl d C t t +g Tl it i l Th T bl i mpl m t y t T bl XLII  
 It ppl t t tl S m dur t whi h ppl bl wh th L t t d d i d f m T bl XXX XXXVIII b tw 95 d 5

# SATELLITE IV

## Tables of the Phenomena

XLVI *continued*

Equation of Semiduration

Var. Lat.	+0 +0 +0 080 084 088	+0 +0 +0 092 096 100	+0 +0 +0 104 108 112	+0 +0 +0 116 120 124	+0 +0 +0 128 132 136	+0 +0 +0 140 144 148	+0 +0 +0 152 156 160	Var. Lat.
0.90	1043 1050 1058	1065 1072 1079	1086 1093 1100	1108 1115 1122	1129 1136 1143	1151 1158 1165	1172 1179 1186	2.10
0.92	1064 1072 1080	1089 1097 1105	1113 1121 1130	1138 1146 1154	1162 1171 1179	1187 1195 1203	1212 1220 1228	2.08
0.94	1084 1093 1102	1112 1121 1130	1139 1148 1158	1167 1176 1185	1194 1204 1213	1222 1231 1240	1250 1259 1267	2.06
0.96	1102 1113 1123	1133 1143 1153	1163 1173 1183	1193 1204 1214	1224 1234 1244	1254 1264 1274	1285 1295 1305	2.04
0.98	1120 1131 1142	1153 1164 1175	1186 1197 1208	1219 1230 1241	1252 1263 1274	1285 1296 1307	1318 1329 1340	2.02
1.00	1137 1148 1160	1172 1184 1195	1207 1219 1231	1243 1254 1266	1278 1290 1302	1314 1325 1337	1349 1361 1373	2.00
1.02	1152 1164 1177	1189 1202 1214	1227 1240 1252	1265 1277 1290	1302 1315 1327	1340 1353 1365	1378 1391 1403	1.98
1.04	1166 1179 1193	1206 1219 1232	1245 1259 1272	1286 1298 1312	1325 1339 1352	1365 1378 1392	1405 1419 1432	1.96
1.06	1180 1193 1208	1221 1236 1249	1263 1277 1291	1305 1319 1333	1347 1361 1375	1389 1403 1417	1431 1445 1459	1.94
1.08	1192 1207 1222	1236 1251 1265	1279 1294 1309	1324 1338 1353	1367 1382 1396	1411 1425 1440	1455 1470 1484	1.92
1.10	1204 1219 1235	1249 1265 1280	1295 1310 1325	1341 1356 1371	1386 1402 1416	1432 1447 1462	1477 1493 1508	1.90
1.12	1215 1231 1247	1262 1278 1294	1309 1325 1341	1357 1372 1388	1404 1420 1435	1451 1467 1483	1498 1514 1530	1.88
1.14	1226 1241 1258	1274 1291 1307	1322 1339 1355	1372 1388 1404	1420 1437 1453	1469 1485 1502	1518 1534 1550	1.86
1.16	1235 1252 1269	1285 1302 1319	1335 1352 1369	1386 1402 1419	1436 1453 1469	1487 1503 1520	1536 1553 1570	1.84
1.18	1244 1261 1279	1296 1313 1330	1347 1365 1381	1399 1416 1433	1450 1468 1485	1502 1519 1537	1554 1571 1588	1.82
1.20	1253 1270 1288	1305 1323 1340	1358 1376 1393	1411 1428 1446	1463 1481 1499	1517 1534 1552	1569 1587 1604	1.80
1.22	1260 1278 1296	1314 1332 1350	1367 1386 1403	1422 1439 1458	1475 1494 1512	1530 1547 1566	1583 1602 1619	1.78
1.24	1267 1285 1304	1322 1341 1359	1377 1395 1413	1432 1450 1469	1487 1506 1524	1542 1560 1579	1597 1616 1634	1.76
1.26	1274 1292 1311	1329 1348 1366	1385 1404 1422	1441 1459 1478	1497 1516 1534	1553 1571 1591	1609 1628 1646	1.74
1.28	1280 1298 1318	1336 1356 1374	1393 1412 1431	1450 1469 1488	1507 1526 1544	1564 1582 1602	1620 1640 1658	1.72
1.30	1285 1304 1323	1342 1362 1381	1400 1419 1438	1458 1477 1496	1515 1535 1554	1573 1592 1612	1631 1650 1669	1.70
1.32	1290 1309 1329	1348 1368 1387	1406 1426 1445	1465 1484 1504	1523 1543 1562	1582 1601 1621	1640 1660 1679	1.68
1.34	1294 1313 1333	1352 1372 1392	1411 1431 1450	1470 1489 1510	1529 1549 1568	1588 1608 1628	1647 1667 1686	1.66
1.36	1298 1317 1337	1356 1377 1397	1416 1436 1456	1476 1496 1516	1535 1556 1575	1595 1615 1635	1655 1675 1694	1.64
1.38	1301 1321 1341	1361 1381 1401	1420 1441 1460	1481 1500 1521	1541 1561 1581	1601 1621 1641	1661 1681 1701	1.62
1.40	1304 1324 1344	1364 1385 1404	1424 1445 1464	1485 1505 1525	1545 1566 1586	1606 1626 1647	1666 1687 1707	1.60
1.42	1306 1326 1346	1366 1387 1407	1427 1447 1467	1488 1508 1528	1548 1569 1589	1610 1630 1650	1670 1691 1711	1.58
1.44	1308 1328 1349	1369 1390 1409	1429 1450 1470	1491 1511 1532	1552 1573 1593	1613 1633 1654	1674 1695 1715	1.56
1.46	1309 1329 1350	1370 1391 1411	1431 1452 1472	1493 1513 1534	1554 1575 1595	1616 1636 1656	1676 1697 1717	1.54
1.48	1310 1330 1351	1371 1392 1412	1432 1453 1473	1494 1514 1535	1555 1576 1596	1617 1637 1658	1678 1699 1719	1.52
1.50	1310 1330 1351	1371 1392 1412	1432 1453 1473	1494 1514 1535	1555 1576 1596	1617 1637 1658	1678 1699 1719	1.50

Applied Constant +900. The unit equals 0.000001. This Table is complementary to Table XLII.  
It supplies a correction to the Semiduration which is applicable when the Latitude as derived from Tables XXX-XXXVIII lies between 0.95 and 2.05.

# SATELLITE IV

## Tables of the Phenomena

XLVII

Equation of Semiduration

Ecl, Oc

M J	0 <sup>d</sup>	1 <sup>d</sup>	2 <sup>d</sup>	3 <sup>d</sup>	4 <sup>d</sup>	5 <sup>d</sup>	6 <sup>d</sup>	7 <sup>d</sup>	8 <sup>d</sup>	9 <sup>d</sup>	10 <sup>d</sup>	11 <sup>d</sup>	12 <sup>d</sup>	13 <sup>d</sup>	14 <sup>d</sup>	15 <sup>d</sup>	16 <sup>d</sup>	17 <sup>d</sup>	18 <sup>d</sup>	19 <sup>d</sup>	20 <sup>d</sup>
00	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	9	90	90	90	90	90
02	91	9	93	93	94	93	93	92	91	90	89	89	88	88	89	90	90	91	92	93	94
04	94	96	98	99	99	98	97	95	93	9	9	89	88	89	90	91	93	95	96	98	99
06	1	103	105	106	107	105	103	100	97	94	9	9	90	90	92	95	97	10	103	105	107
08	107	111	115	116	117	115	111	107	102	98	95	93	93	94	97	10	104	108	112	115	117
10	117	1	127	129	129	126	121	115	109	103	99	97	97	99	10	107	113	119	124	128	130
12	118	136	14		*		134	125	117	110	105	103	103	105	110	116	123	131	138	144	*
14	143	*	*		*				106	117	111	109	109	11	118	106	135	146		*	*
16			*	*			*	*	*		119	115	116	120	128	138	*		*	*	*
66	*		*	*	*	*			*	*	*		118	122	*	*	*	*	*	*	*
68	*			*	*	*		*			135	105	118	114	113	116	*	*	*	*	*
70	10	130	*	*	*	*		*	142	132	124	116	110	108	107	110	115	103	*	*	*
72	11	119	106	135	140	14	139	133	127	10	113	108	103	101	101	103	108	114	122	129	136
74	5	111	116	111	125	106	104	121	116	110	105	101	98	96	96	98	102	107	113	118	123
76	100	104	108	111	113	114	113	110	107	103	99	95	93	9	93	94	97	101	105	109	112
78	95	98	100	103	104	104	103	101	99	96	93	91	90	89	90	91	93	96	99	101	103
80	92	94	95	96	97	97	96	95	93	92	90	89	88	88	89	90	91	93	94	96	97
82	90	91	9	92	9	92	92	9	91	90	90	89	89	89	89	89	90	91	91	9	92
84	90	90	90	89	89	89	9	90	90	9	91	91	91	91	91	91	90	90	90	90	89
86	91	90	89	88	88	88	89	90	91	93	94	94	95	95	94	93	9	91	90	89	88
88	94	91	9	89	89	89	91	93	95	97	99	100	101	10	99	97	95	93	91	89	89
90	97	94	92	91	91	92	94	97	10	103	106	108	109	108	106	103	99	96	93	91	91
92	1	98	96	94	94	96	99	103	108	113	117	119	120	118	115	111	106	101	97	95	94
94	108	103	100	98	99	101	106	111	117	124	129	133	134	131	106	120	113	107	10	99	98
96	116	109	105	104	105	108	113	101	108	137	144	*	*	*	*	131	121	113	108	104	104
98	105	117	11	110	112	116	123	132	143		*	*	*	*	*	*	*	122	115	111	110
100		*	10	117	120	125	135				*	*		*	*		*			118	118
150	*			109	122	118	119	*	*	*	*	*	*	*	*	*	*	*	*	136	127
152		138	128	10	114	11	112	116	104		*	*	*	*	*	*	*	146	134	125	118
154	134	106	118	111	107	105	106	109	115	103	*	*	*	*	*	*	140	13	103	116	110
156	102	115	109	104	101	99	10	103	108	114	1	129	134	137	136	132	106	120	113	107	103
158	111	106	10	98	95	95	95	97	102	107	11	117	10	102	101	119	114	109	105	100	97
160	103	99	96	93	91	91	9	94	97	10	104	107	110	111	110	108	105	101	98	95	9
162	96	94	9	90	89	89	89	91	93	96	98	100	102	1	10	100	98	96	93	91	89
164	92	91	91	89	88	88	89	90	91	9	94	95	95	96	95	94	93	92	90	89	88
166	90	9	89	89	89	89	89	90	90	90	91	91	91	91	91	91	91	90	90	89	89
168	9	91	91	9	9	9	91	91	91	90	89	89	89	89	89	89	90	91	91	91	9
170	93	94	95	96	96	96	95	94	9	91	89	88	88	88	89	90	92	93	94	96	96
172	97	99	101	103	103	10	1	98	95	9	91	89	89	89	91	93	95	98	100	1	103
174	103	107	110	111	111	110	107	104	100	96	93	9	91	92	94	97	101	104	108	110	112
176	112	117	101	123	103	121	116	111	106	101	97	95	95	96	99	104	109	113	118	102	123
178	103	130	134	138	138	134	108	121	113	107	103	100	106	102	106	112	118	105	131	136	138
180	136	145			*			131	12	114	109	106	106	109	114	121	130	139	148	*	*

Appl dC ta t + g      lh unit q l oooo  
 Th T bl    mpl m t y t T bl XLIII It ppl      ti t th S mid t wh h    ppl bl wh th L tit d d i d  
 f m T bl XXX XXXVII H b tw      95 d

# SATELLITE IV

## Tables of the Phenomena

XLVIII

Equation of Semiduration

Sh., Tr.

M J	0 <sup>d</sup>	1 <sup>d</sup>	2 <sup>d</sup>	3 <sup>d</sup>	4 <sup>d</sup>	5 <sup>d</sup>	6 <sup>d</sup>	7 <sup>d</sup>	8 <sup>d</sup>	9 <sup>d</sup>	10 <sup>d</sup>	11 <sup>d</sup>	12 <sup>d</sup>	13 <sup>d</sup>	14 <sup>d</sup>	15 <sup>d</sup>	16 <sup>d</sup>	17 <sup>d</sup>	18 <sup>d</sup>	19 <sup>d</sup>	20 <sup>d</sup>
d 0.0	7	8	9	12	14	17	19	20	21	21	20	18	16	13	11	9	7	7	8	10	12
0.2	9	11	14	16	20	22	23	24	23	21	19	17	14	11	10	9	8	9	11	15	19
0.4	14	18	22	26	28	30	30	29	27	25	22	19	15	14	12	12	13	16	18	23	27
0.6	24	29	34	38	41	41	41	38	35	31	27	23	20	18	17	19	21	25	30	35	40
0.8	37	43	50	54	57	57	55	51	45	39	34	30	27	26	27	29	33	39	45	51	56
1.0	54	61	69	74	77	76	71	65	58	50	44	39	37	36	38	42	49	56	62	71	76
1.2	73	84	93	*	*	*	92	82	72	63	56	51	49	49	53	58	66	76	86	96	*
1.4	96	*	*	*	*	*	*	*	89	77	69	63	62	63	68	76	86	100	*	*	*
1.6	*	*	*	*	*	*	*	*	*	*	84	77	76	78	85	96	*	*	*	*	*
6.6	*	*	*	*	*	*	*	*	*	*	*	*	92	87	*	*	*	*	*	*	*
6.8	*	*	*	*	*	*	*	*	*	*	91	80	74	72	73	79	*	*	*	*	*
7.0	80	90	*	*	*	*	*	*	93	80	72	64	60	59	60	66	73	74	*	*	*
7.2	65	74	79	90	95	94	88	79	69	61	55	48	45	45	48	52	60	68	76	85	91
7.4	52	59	64	69	72	70	65	59	52	44	38	35	34	34	37	41	47	54	61	66	71
7.6	41	46	50	52	53	51	47	42	37	31	27	24	23	25	29	32	37	42	47	51	53
7.8	31	35	37	38	38	35	31	27	23	19	16	15	16	18	22	25	29	33	36	37	38
8.0	25	27	28	27	26	24	20	17	13	11	10	11	12	15	18	21	24	26	27	28	28
8.2	21	22	22	21	18	16	13	11	9	7	8	9	12	15	17	19	21	22	22	22	20
8.4	21	20	19	16	14	11	10	8	7	7	10	12	15	17	19	21	21	21	20	19	16
8.6	23	21	19	16	13	11	9	9	9	12	15	17	21	23	24	25	24	23	21	18	15
8.8	29	25	22	18	16	13	13	14	16	19	23	27	31	32	33	32	30	28	24	20	18
9.0	36	31	27	24	21	20	20	22	26	30	35	40	44	45	45	43	38	35	30	26	23
9.2	46	40	36	31	29	28	30	33	39	46	53	58	62	62	60	56	50	44	39	34	30
9.4	58	51	46	41	40	39	43	48	55	65	73	80	84	82	78	72	64	56	49	44	40
9.6	73	64	57	53	52	53	57	66	74	86	96	*	*	*	*	90	79	69	62	55	53
9.8	89	79	71	66	66	68	75	84	97	*	*	*	*	*	*	*	*	89	79	69	66
10.0	*	*	86	81	82	85	95	*	*	*	*	*	*	*	*	*	*	*	*	83	82
15.0	*	*	*	90	84	83	86	*	*	*	*	*	*	*	*	*	*	*	*	97	88
15.2	*	92	81	73	69	69	71	78	90	*	*	*	*	*	*	*	*	102	88	78	72
15.4	82	72	63	57	54	55	58	64	72	81	*	*	*	*	*	*	90	79	69	61	56
15.6	62	54	47	43	42	42	46	51	58	66	77	81	86	87	83	76	68	59	51	45	43
15.8	44	38	34	31	30	32	35	39	46	52	58	63	65	65	61	56	48	41	36	32	30
16.0	30	25	22	21	21	24	27	31	36	40	44	47	48	47	43	39	33	27	25	23	21
16.2	18	16	14	14	16	18	20	24	28	32	34	35	35	33	30	25	21	18	15	14	14
16.4	11	11	11	11	12	15	18	21	23	25	26	26	24	23	19	15	12	11	9	11	11
16.6	7	8	8	10	13	15	18	20	21	21	21	20	18	15	12	10	9	7	8	9	11
16.8	7	9	11	14	17	20	21	22	22	21	19	17	15	12	10	8	8	9	9	12	15
17.0	12	14	17	21	24	26	27	27	25	23	20	17	14	12	10	10	11	12	15	19	22
17.2	19	23	27	32	34	36	36	34	31	27	24	20	17	15	14	15	17	21	25	29	33
17.4	30	36	42	46	49	50	48	45	40	35	30	27	23	22	22	24	28	32	38	43	48
17.6	46	53	60	65	68	67	63	58	50	45	39	35	32	31	32	36	42	47	55	62	66
17.8	64	73	80	87	90	86	81	75	65	57	50	46	43	43	45	51	58	67	76	83	88
18.0	84	97	*	*	*	*	*	92	81	70	62	58	56	57	60	67	78	89	101	*	*

Applied Constant : +90.

The unit equals 0<sup>d</sup>.000001.

This Table is complementary to Table XLIV. It supplies a correction to the Semiduration which is applicable when the Latitude as derived from Tables XXX-XXXVIII lies between 0°05 and 2°05.

# SATELLITE IV

## Tables of the Phenomena

### Equations of Semiduration

XLIX

$\alpha$	Ecl Oc	$\alpha$	Ecl Oc
$\alpha$			
0	+00 0050	2500	-0 000044
100	50	2600	40
200	48	2700	36
300	45	2800	3
400	4	2900	24
500	37	3000	18
600	+0 0003	3100	-0 00 011
700	6	3200	- 4
800	20	3300	+ 4
900	13	3400	11
1000	+ 6	3500	18
1100	-0 000001	3600	+0 0000 4
1200	8	3700	30
1300	15	3800	36
1400	2	3900	41
1500	8	4000	44
1600	-0 000034	4100	+ 000047
1700	39	4200	49
1800	43	4300	50
1900	46	4400	50
2000	49	4500	49
2100	-0 000050	4600	+ 00046
2200	50	4700	43
2300	49	4800	39
2400	47	4900	34
2500	- 000044	5000	+0 00 28

N C t th l d d d

L

Ecl, Oc, Sh, Tr

L t	25 24 23 22	21 20 19	18 17 16	Lat
$\beta$	05 06 07 08	09 10 11	12 13 14	$\beta$
$\alpha$				
0	10 10 10 10	10 10 10	10 10 10 10	0
20	10 11 12 1	12 13 13	13 13 13 13	20
40	1 12 13 14	14 14 15	15 15 15 15	40
60	10 13 14 15	16 16 16	17 17 17 17	60
80	10 13 15 16	17 18 18	19 19 19 19	80
100	1 14 15 16	17 18 18	19 19 19 19	100
120	10 13 15 16	17 18 18	19 19 19 19	120
140	10 13 14 15	16 16 16	17 17 17 17	140
160	10 12 13 14	14 14 15	15 15 15 15	160
180	10 11 1 12	12 13 13	13 13 13 13	180
200	10 10 10 10	10 10 10	10 10 10 10	200
220	10 9 8 8	8 7 7	7 7 7 7	220
240	10 8 7 6	6 6 5	5 5 5 5	240
260	1 7 6 5	4 4 4	3 3 3 3	260
280	10 7 5 4	3 2	1 1 1 1	280
300	10 6 5 4	3 2	1 1 1 1	300
320	10 7 5 4	3 2	1 1 1 1	320
340	10 7 6 5	4 4 4	3 3 3 3	340
360	10 8 7 6	6 6 6	5 5 5 5	360
380	10 9 8 8	8 7 7	7 7 7 7	380
400	10 10 10 10	10 10 10	10 10 10 10	400

Appli d C t t +

11 16 q l 0000

LI

Oc, Tr

Lat	2 48 2 46 2 44	2 42 2 40 2 38	2 36 2 34 2 32	2 30 2 20 2 10	2 00 1 90 1 80	1 70 1 60	Lat
$\beta$	0 52 0 54 0 56	0 58 0 60 0 62	0 64 0 66 0 68	0 70 0 80 0 90	1 00 1 10 1 20	1 30 1 40	$\beta$
$\alpha$							
0	$\pm 236 \pm 168 \pm 138$	$\pm 1 0 \pm 108 \pm 99$	$\pm 9 \pm 87 \pm 82$	$\pm 78 \pm 66 \pm 59$	$\pm 54 \pm 51 \pm 49$	$\pm 48 \pm 47 \pm 47$	0
20	2 4 160 131	114 103 94	88 82 78	74 63 56	52 49 47	46 45 45	20
40	191 136 111	97 87 80	74 7 66	63 53 48	44 41 4	39 38 38	40
60	136 96 79	69 6 57	53 5 47	45 38 34	31 29 28	28 27 7	60
80	$\pm 70 \pm 50 \pm 41$	$\pm 36 \pm 3 \pm 30$	$\pm 27 \pm 6 \pm 25$	$\pm 24 \pm 0 \pm 18$	$\pm 16 \pm 15 \pm 15$	$\pm 14 \pm 14 \pm 14$	80
100	$\mp \mp \mp 2 \mp 1$	$\mp \mp \mp 1 \mp 1$	$\mp \mp \mp 1 \mp 1$	$\mp \mp \mp 1 \mp 1$	$\mp \mp \mp 1 \mp 1$	$\mp \mp \mp 1 \mp 1$	100
120	$\mp 73 \mp 53 \mp 43$	$\mp 38 \mp 34 \mp 3$	$\mp 29 \mp 27 \mp 26$	$\mp 5 \mp 21 \mp 19$	$\mp 17 \mp 16 \mp 16$	$\mp 15 \mp 15 \mp 15$	120
140	138 98 81	70 63 58	54 51 48	46 39 35	3 3 29	29 28 28	140
160	191 136 111	97 87 80	74 70 66	63 53 48	44 41 40	39 38 38	160
180	2 4 160 131	114 103 94	88 82 78	74 63 56	52 49 47	46 45 45	180
200	36 168 138	1 108 99	92 87 82	78 66 59	54 51 49	48 47 47	200
220	$\mp 4 \mp 16 \mp 131$	$\mp 114 \mp 103 \mp 94$	$\mp 88 \mp 82 \mp 78$	$\mp 74 \mp 63 \mp 56$	$\mp 52 \mp 49 \mp 47$	$\mp 46 \mp 45 \mp 45$	220
240	191 136 111	97 87 8	74 70 66	63 53 48	44 41 40	39 38 38	240
260	136 96 79	69 6 57	53 50 47	45 38 34	31 9 28	29 28 27	260
280	$\mp 70 \mp 5 \mp 41$	$\mp 36 \mp 32 \mp 30$	$\mp 27 \mp 26 \mp 25$	$\mp 24 \mp 20 \mp 18$	$\mp 16 \mp 15 \mp 15$	$\mp 14 \mp 14 \mp 14$	280
300	$\pm 2 \pm 2 \pm 1$	$\pm 1 \pm 1 \pm 1$	$\pm 1 \pm 1 \pm 1$	$\pm 1 \pm 1 \pm 1$	$\pm 1 \pm 1 \pm 1$	$\pm 1 \pm 1 \pm 1$	300
320	$\pm 73 \pm 53 \pm 43$	$\pm 38 \pm 34 \pm 32$	$\pm 29 \pm 27 \pm 26$	$\pm 5 \pm 1 \pm 19$	$\pm 17 \pm 16 \pm 16$	$\pm 15 \pm 15 \pm 15$	320
340	138 98 81	70 63 58	54 51 48	46 39 35	3 30 29	9 8 28	340
360	191 136 111	97 87 80	74 70 66	63 53 48	44 41 40	39 38 38	360
380	4 6 131	114 1 3 94	88 82 78	74 63 56	52 49 47	46 45 45	380
400	$\pm 36 \pm 168 \pm 138$	$\pm 120 \pm 108 \pm 99$	$\pm 9 \pm 87 \pm 82$	$\pm 78 \pm 66 \pm 59$	$\pm 54 \pm 51 \pm 49$	$\pm 48 \pm 47 \pm 47$	400

N C t th b d d d

Th nit q l 00000

Th pp ig ppl t O It ti th l w lgn t T It

# SATELLITE IV

## Tables of the Phenomena

LII

Reductions to Middle

Argument J

1	2	3	4	5	6	7
Ecl., Oc.	$\Delta$	$\frac{1}{2}\Delta^2$	J	Sh., Tr.	$\Delta$	$\frac{1}{2}\Delta^2$
d -0'000928	-213	0	0'0	d -0'001072	-288	0
1141	213	+1	0'1	1360	288	+1
1353	211	1	0'2	1647	286	2
1563	208	2	0'3	1931	281	3
1768	204	2	0'4	2208	275	3
1970	199	3	0'5	2481	268	4
-0'002165	-192	+4	0'6	-0'002745	-259	+5
2353	184	4	0'7	2999	249	6
2533	176	5	0'8	3242	237	6
2704	166	5	0'9	3473	225	7
2865	156	5	1'0	3692	211	8
-0'003015	-145	+6	1'1	-0'003895	-195	+8
3154	132	7	1'2	4081	178	9
3279	119	7	1'3	4251	161	9
3391	106	7	1'4	4403	143	10
3490	91	8	1'5	4536	123	10
-0'003573	-76	+7	1'6	-0'004649	-103	+10
3642	62	8	1'7	4742	83	10
3696	46	8	1'8	4815	62	11
3733	30	8	1'9	4865	40	11
3755	-14	8	2'0	4895	-19	11
-0'003761	+2	+8	2'1	-0'004903	+3	+11
3751	18	8	2'2	4889	25	11
3725	35	8	2'3	4854	47	11
3682	51	8	2'4	4796	68	10
3624	65	7	2'5	4718	88	10
-0'003552	+80	+7	2'6	-0'004620	+109	+10
3464	96	7	2'7	4501	129	10
3361	109	7	2'8	4363	148	9
3246	122	7	2'9	4205	166	9
3117	136	7	3'0	4031	183	8
-0'002975	+148	+6	3'1	-0'003839	+199	+8
2822	159	5	3'2	3633	214	8
2658	169	4	3'3	3411	229	7
2484	176	5	3'4	3176	241	6
2302	187	5	3'5	2929	252	5
-0'002111	+194	+3	3'6	-0'002672	+262	+5
1914	200	3	3'7	2406	270	4
1712	205	2	3'8	2132	277	3
1505	209	2	3'9	1852	283	2
1294	212	+1	4'0	1567	286	+1
-0'001082	+213	0	4'1	-0'001280	+288	0
868	213	0	4'2	992	288	0
656	212	-1	4'3	704	287	-1
445	210	1	4'4	418	284	2
237	207	2	4'5	-	136	3
-0'000031	+203	-3	4'6	+0'000141	+273	-4
+168	197	3	4'7	410	266	4
362	190	4	4'8	672	257	5
548	182	4	4'9	924	246	6
+0'000726	+173	-5	5'0	+0'001164	+234	-6

1	2	3	4	5	6	7
Ecl., Oc.	$\Delta$	$\frac{1}{2}\Delta^2$	J	Sh., Tr.	$\Delta$	$\frac{1}{2}\Delta^2$
d +0'000726	+173	-5	5'0	d +0'001164	+234	-6
894	163	5	5'1	1392	221	7
1052	153	6	5'2	1606	206	8
1199	141	6	5'3	1804	190	8
1334	129	7	5'4	1986	173	9
1456	115	7	5'5	2150	156	9
+0'001564	+102	-7	5'6	+0'002298	+138	-10
1659	87	8	5'7	2425	118	10
1738	72	8	5'8	2533	98	10
1803	57	8	5'9	2620	77	11
1852	41	8	6'0	2687	56	11
+0'001885	+25	-8	6'1	+0'002732	+34	-11
1902	+10	8	6'2	2755	+13	11
1904	-7	8	6'3	2757	-9	11
1889	23	8	6'4	2738	31	11
1858	39	8	6'5	2696	53	11
+0'001812	-55	-8	6'6	+0'002633	-74	-10
1749	70	7	6'7	2549	94	10
1673	84	7	6'8	2445	115	10
1581	99	7	6'9	2320	135	10
1475	113	7	7'0	2176	153	9
+0'001355	-127	-7	7'1	+0'002015	-171	-9
1222	139	6	7'2	1835	187	8
1077	151	6	7'3	1640	203	8
921	162	5	7'4	1428	219	7
754	172	5	7'5	1203	232	6
+0'000578	-180	-4	7'6	+0'000965	-244	-6
394	189	4	7'7	715	255	5
201	196	3	7'8	455	265	5
+2	202	3	7'9	+186	273	3
-202	206	2	8'0	-90	279	2
-0'000409	-209	-2	8'1	-0'000371	-283	-2
620	212	-1	8'2	656	287	-1
833	213	0	8'3	944	288	0
1046	213	0	8'4	1232	288	0
1259	212	+1	8'5	1520	287	+1
-0'001470	-210	+1	8'6	-0'001805	-283	+2
1678	206	3	8'7	2086	278	3
1881	200	3	8'8	2360	271	4
2078	195	3	8'9	2628	264	4
2270	188	4	9'0	2887	254	5
-0'002454	-180	+4	9'1	-0'003136	-243	+6
2629	171	5	9'2	3372	230	6
2795	161	5	9'3	3596	218	7
2950	150	6	9'4	3807	202	8
3094	138	6	9'5	3999	186	8
-0'003225	-125	+7	9'6	-0'004178	-170	+9
3343	112	7	9'7	4338	151	10
3448	98	7	9'8	4480	132	10
3538	83	8	9'9	4601	112	10
-0'003614	-68	+8	10'0	-0'004703	-92	+10

Applied Constant: -0'000000.

This Table includes a constant portion of the Equation of Light.

The Entry must be

Supplemented by the Equations from Tables LIII-LX.

The whole must be corrected by adding to it its product by the Variation, as drawn from

Tables XXVI-XXIX.

For Shadows and Transits it must also be corrected for Jupiter's Phase by Table LXI.

# SATELLITE IV

## Tables of the Phenomena

LII—continued

Reductions to Middle

Argument J

Ecl Oc	$\Delta$	3	4	5	6	7
		$\frac{1}{2}\Delta^2$	J	Sh I	$\Delta$	$\frac{1}{2}\Delta^2$
d -0003614	-68	+8	100	-0004703	-92	+10
3674	53	8	101	4785	7	11
3719	37	8	102	4846	50	11
3748	21	8	103	4885	8	11
3761	-5	8	104	4903	-7	11
3758	+11	8	105	4898	+15	11
-0003739	+8	+8	106	-0004872	+36	+11
3703	44	8	107	4826	58	11
3651	59	7	108	4755	79	1
3586	73	7	109	4666	99	10
3505	88	8	110	4558	120	10
-0003410	+103	+7	111	-000447	+140	+10
399	117	7	112	478	158	9
3176	130	7	113	4111	176	9
340	143	6	114	397	19	8
2891	154	5	115	377	208	7
-00073	+164	+5	116	-0003511	+21	+7
2563	174	5	117	3283	235	7
384	183	4	118	3041	248	6
197	191	4	119	787	58	5
03	197	3	120	55	266	4
-0001803	+203	+3	121	-000255	+73	+4
1598	8		122	1978	280	3
1388	11	+1	123	1695	85	
1176	13	0	124	1409	287	+1
963	13	0	125	11	288	
-000075	+1	-1	126	-00083	+88	0
539	211	1	127	545	86	-1
38	09		128	-61	8	2
-1	24		129	+18	277	3
+8	200	3	130	9	70	4
+0000277	+193	-4	131	+000557	+261	-5
466	186	4	132	814	51	6
648	178	5	133	1059	39	6
81	168	5	134	19	227	7
983	158	6	135	1513	213	7
+0001136	+146	-6	136	+0001718	+198	-8
1275	134	6	137	1908	181	9
1404	12	7	138	80	164	9
1518	108	7	139	235	146	9
169	94	7	140	2371	127	10
+000175	+79	-8	141	+000488	+107	-10
1776	64	8	142	2584	86	10
183	48	8	143	266	66	11
1873	33	8	144	715	44	11
1897	+16	8	145	748	+2	11
+000195	0	-8	146	+000759		-11
1897	-15	8	147	2749	-21	11
1875	31	8	148	717	43	11
1835	48	8	149	2664	64	11
+0001779	-63	-8	150	+000589	-86	-11

Ecl Oc	$\Delta$	3	4	5	6	7
		$\frac{1}{2}\Delta^2$	J	Sh T	$\Delta$	$\frac{1}{2}\Delta^2$
d +0001779	-63	-8	150	+0002589	-86	-11
179	78	8	151	2493	106	10
1624	93	7	152	2378	15	10
154	107	7	153	2244	145	10
1411	11	7	154	089	164	9
1283	13	6	155	1917	180	8
+0001145	-146	-6	156	+0001730	-196	-8
992	158	5	157	1525	213	8
830	169	5	158	1305	6	7
657	177	4	159	1073	239	6
477	185	4	160	88	251	6
+0000288	-193	-4	161	1000057	-261	-5
+91	199	3	162	37	69	4
-110	04		163	+34	76	3
316	208		164	-245	8	3
56	21	-1	165	59	86	2
-0000739	-213	0	166	-0000816	-288	-1
952	213	0	167	1104	288	0
1165	1	+1	168	139	288	+1
1377	10	1	169	1679	285	2
1585	207	2	170	1962	280	3
-0001791	-03	+2	171	-000238	-274	+3
1991	198	3	172	2510	268	4
186	191	4	173	2773	59	5
373	183	4	174	3027	248	6
552	175	4	175	3269	36	6
-0007	-166	+5	176	-0003498	-3	+7
883	156	6	177	3715	210	7
3033	143	7	178	3917	194	8
3168	130	7	179	4103	177	9
3292	118	7	180	4270	159	9
-0003403	-104	+7	181	-0004420	-140	+10
3500	90	7	182	4550	120	10
3582	75	8	183	4660	101	10
365	60	8	184	4751	81	10
3702	43	8	185	48	60	11
-003736	-7	+8	186	-0004870	-38	+11
3755	-13	8	187	4898	-17	11
3761	+3	8	188	4904	+5	11
375	20	8	189	4887	27	11
37	37	8	190	4849	49	11
-003676	+53	+7	191	-0004790	+71	+11
3617	67	7	192	4708	91	10
354	8	7	193	4608	111	10
3453	97	7	194	4487	131	10
3349	111	7	195	4347	150	9
-000332	+14	+6	196	-0004188	+168	+9
311	137	6	197	4011	185	8
2958	149	6	198	3818	201	8
2804	160	5	199	369	216	7
-000639	+17	+5	200	-0003387	+228	+6

Appl dC t t oo Th T bl l d t tp t fth Eq ti fLight Th E tym tb  
 ppl m t d by th Eq t f m T bl LXX LX Th whl m tb t d by d d i g t t p d t by th V i t d w n f m  
 T bl XXVI XXIX F Sh d w d T it it m t l b corr t d f J pit Ph ly T bl LXX



# SATELLITE IV

## Tables of the Phenomena

**LIII**

**Reductions to Middle**

**Argument K**

1	2	3	4	5
Ecl., Oc.	$\Delta$	<b>K</b>	Sh., Tr.	$\Delta$
d 0'000750	- 47	0'0	0'000750	- 55
703	47	0'1	696	55
656	47	0'2	641	54
610	46	0'3	587	54
564	45	0'4	534	53
520	44	0'5	482	51
0'000477	- 43	0'6	0'000432	- 49
435	41	0'7	384	47
395	39	0'8	338	45
357	37	0'9	294	43
322	34	1'0	252	40
0'000289	- 32	1'1	0'000214	- 37
258	30	1'2	179	34
230	26	1'3	146	31
206	23	1'4	117	27
184	21	1'5	92	23
0'000165	- 17	1'6	0'000071	- 20
150	14	1'7	53	16
138	10	1'8	39	12
130	7	1'9	29	8
125	- 3	2'0	24	- 3
0'000124	0	2'1	0'000023	+ 1
126	+ 4	2'2	26	5
132	8	2'3	32	9
141	11	2'4	43	13
154	15	2'5	58	17
0'000170	+ 18	2'6	0'000076	+ 21
189	21	2'7	99	25
212	25	2'8	125	28
238	28	2'9	155	32
267	30	3'0	188	35
0'000298	+ 33	3'1	0'000225	+ 39
332	35	3'2	264	41
368	37	3'3	306	43
406	39	3'4	350	46
446	41	3'5	397	48
0'000488	+ 43	3'6	0'000446	+ 50
532	45	3'7	497	52
577	46	3'8	549	53
623	46	3'9	602	54
669	47	4'0	656	54
0'000716	+ 47	4'1	0'000710	+ 55
763	47	4'2	765	55
810	47	4'3	820	55
857	47	4'4	874	54
903	46	4'5	928	54
0'000948	+ 45	4'6	0'000981	+ 52
992	44	4'7	1032	50
1035	42	4'8	1081	48
1076	40	4'9	1129	47
0'001115	+ 39	5'0	0'001175	+ 45

1	2	3	4	5
Ecl., Oc.	$\Delta$	<b>K</b>	Sh., Tr.	$\Delta$
d 0'001115	+ 39	5'0	0'001175	+ 45
1153	37	5'1	1218	42
1188	34	5'2	1259	39
1220	31	5'3	1296	36
1250	29	5'4	1331	33
1277	26	5'5	1362	30
0'001301	+ 23	5'6	0'001390	+ 26
1322	20	5'7	1414	23
1340	16	5'8	1435	19
1354	13	5'9	1451	15
1305	9	6'0	1464	11
0'001372	+ 5	6'1	0'001473	+ 7
1375	+ 2	6'2	1477	+ 2
1376	- 1	6'3	1477	- 2
1373	5	6'4	1474	6
1366	9	6'5	1466	10
0'001356	- 12	6'6	0'001454	- 14
1342	16	6'7	1438	18
1325	19	6'8	1418	22
1305	22	6'9	1394	26
1281	25	7'0	1367	29
0'001255	- 28	7'1	0'001336	- 33
1226	31	7'2	1302	36
1194	34	7'3	1265	39
1159	36	7'4	1225	42
1122	38	7'5	1182	44
0'001083	- 40	7'6	0'001137	- 47
1042	42	7'7	1089	49
1000	43	7'8	1040	50
956	45	7'9	989	52
910	46	8'0	936	53
0'000864	- 46	8'1	0'000883	- 54
818	47	8'2	829	55
771	47	8'3	774	55
724	47	8'4	719	55
677	47	8'5	665	55
0'000630	- 47	8'6	0'000610	- 54
584	46	8'7	557	53
539	45	8'8	505	52
495	43	8'9	454	50
453	42	9'0	405	48
0'000412	- 40	9'1	0'000358	- 46
373	38	9'2	313	44
337	35	9'3	270	42
303	33	9'4	230	38
272	31	9'5	194	35
0'000242	- 28	9'6	0'000160	- 32
216	25	9'7	130	29
192	22	9'8	103	25
172	18	9'9	80	22
0'000156	- 14	10'0	0'000060	- 18

Applied Constant:  $+0^{\text{h}}00^{\text{m}}07^{\text{s}}50$ .

# SATELLITE IV

## Tables of the Phenomena

### Reductions to Middle

LIV

Ecl Oc	$\Delta$ o <sup>d</sup>	3 L	4 Sh Tr	5 $\Delta$ o
0 000100	+6	00	<sup>a</sup> 0 000100	+6
111	5	02	11	6
1 0	5	04	1 4	6
13	5	06	135	5
139	4	08	145	5
146	4	10	154	4
000153	+3	12	0 000162	+4
159	3	14	169	3
164		16	174	
167	+1	18	178	2
168		20	180	+1
0 000168	-1	22	0 000180	-1
166	1	24	177	
163	2	26	174	
158	3	28	168	3
153	3	30	161	4
00146	-4	32	0 000152	-5
138	5	34	143	5
1 8	5	36	133	5
118	5	38	122	6
109	5	40	111	6
0 000098	-5	42	0 000098	-6
89	5	44	86	6
78	5	46	75	6
69	5	48	64	5
60	4	50	54	5
0 000053	-4	52	0 000045	-5
46	3	54	36	4
40	3	56	30	3
36		58	5	
33	-1	60	2	-1
0 00003		62	0 000020	0
33	+1	64	1	+1
34	1	66	3	
38		68	7	3
4	3	70	33	3
0 0 0048	+3	72	0 000040	+4
55	4	74	48	5
64	5	76	58	5
73	5	78	68	6
8	5	80	8	6
0 00093	+5	82	0 000091	+6
1 3	5	84	104	6
113	5	86	116	6
123	5	88	1 7	6
132	5	90	138	5
0 000141	+4	92	0 000147	+5
149	4	94	157	5
155	3	96	165	4
160		98	171	3
000164	+	100	0 000175	+2

Appl dC t t +

LV

M	E O S T	M	E O S T
00	<sup>a</sup> 0 00005	100	0 000017
02	45	102	17
04	40	104	16
06	35	106	16
08	30	108	17
10	6	110	18
12	0 00 0 3	112	0 000021
14	0	114	4
16	18	116	8
18	17	118	3
20	16	120	37
22	0 000016	122	0 000042
24	17	124	47
26	18	126	53
28	0	128	57
30	23	130	62
32	0 000027	132	0 000067
34	31	134	71
36	36	136	75
38	41	138	78
40	46	140	81
42	0 000051	142	0 00 083
44	56	144	85
46	61	146	84
48	66	148	84
50	70	150	83
52	0 000074	152	0 000081
54	77	154	78
56	80	156	75
58	82	158	71
60	84	160	67
62	0 000085	162	0 000063
64	84	164	58
66	83	166	53
68	8	168	48
70	79	170	42
72	0 000076	172	0 000037
74	7	174	33
76	68	176	29
78	64	178	24
80	59	180	21
82	0 000054	182	0 000 18
84	49	184	17
86	43	186	17
88	38	188	17
90	34	190	16
92	0 000030	192	0 00016
94	5	194	17
96		196	18
98	19	198	2
100	0 000017	200	0 0000 5

Appl dC ta t + oo

LVI

E	E O S T
00	<sup>a</sup> 0 000050
05	55
10	6
15	65
20	69
25	73
30	0 000075
35	77
40	78
45	78
50	77
55	0 000075
60	72
65	68
70	64
75	59
80	0 000054
85	48
90	43
95	38
100	34
105	0 000030
110	26
115	24
120	23
125	22
130	0 00002
135	4
140	26
145	9
150	33
155	0 000038
160	43
165	48
170	53
175	58
180	0 000063
185	68
190	71
195	74
200	0 000077

C t t + oo 5

LVII

I	Ecl Oc
	<sup>a</sup>
1850	0 000 05
60	7
70	9
80	9
90	10
1900	10
1910	0 000011
20	14
30	17
40	
50	29
1960	0 000037
70	46
80	54
90	6
2000	000068

C t t + oo

LVIII

I	Sh Tr
	<sup>a</sup>
1850	0 000095
60	93
70	91
80	91
90	90
1900	90
1910	0 000089
20	86
30	83
40	78
50	71
1960	000063
70	54
80	46
90	38
2000	0 00003

C t t + oo

# SATELLITE IV

## Tables of the Phenomena

LIX

Equation of the Reduction

Occultations

J γ	0 <sup>d.0</sup>	0 <sup>d.5</sup>	1 <sup>d.0</sup>	1 <sup>d.5</sup>	2 <sup>d.0</sup>	2 <sup>d.5</sup>	3 <sup>d.0</sup>	3 <sup>d.5</sup>	4 <sup>d.0</sup>	4 <sup>d.5</sup>	5 <sup>d.0</sup>	5 <sup>d.5</sup>	6 <sup>d.0</sup>	6 <sup>d.5</sup>	7 <sup>d.0</sup>	7 <sup>d.5</sup>	8 <sup>d.0</sup>	8 <sup>d.5</sup>	9 <sup>d.0</sup>
0	+ 17	+ 17	+ 16	+ 14	+ 12	+ 10	+ 8	+ 5	+ 1	- 2	- 5	- 8	- 11	- 13	- 15	- 16	- 17	- 17	- 17
10	+109	+107	+101	+ 92	+ 79	+ 64	+ 46	+ 28	+ 8	-13	- 34	- 51	- 69	- 84	- 95	-103	-109	-109	-106
20	+197	+193	+182	+166	+144	+116	+ 84	+ 49	+13	-24	- 60	- 94	-125	-151	-171	-186	-195	-196	-191
30	+280	+274	+259	+236	+204	+164	+119	+ 70	+19	-34	- 85	-134	-178	-214	-244	-265	-278	-279	-271
40	+354	+347	+328	+298	+258	+208	+151	+ 88	+23	-44	-108	-169	-225	-271	-308	-335	-351	-352	-342
50	+418	+409	+388	+352	+305	+245	+178	+104	+28	-51	-127	-200	-265	-321	-365	-397	-415	-416	-410
60	+470	+460	+435	+395	+343	+275	+199	+116	+31	-57	-144	-224	-298	-360	-409	-445	-466	-468	-454
70	+507	+497	+470	+427	+370	+298	+216	+126	+33	-63	-155	-243	-322	-388	-443	-483	-503	-505	-490
80	+530	+519	+492	+446	+387	+311	+226	+132	+35	-65	-163	-253	-336	-406	-463	-502	-526	-528	-513
90	+537	+526	+498	+452	+392	+316	+229	+134	+35	-66	-164	-257	-341	-412	-469	-509	-533	-535	-520
100	+528	+517	+490	+445	+386	+311	+225	+131	+34	-65	-161	-252	-336	-404	-461	-502	-524	-526	-511
110	+504	+494	+467	+425	+368	+295	+215	+125	+33	-62	-155	-241	-319	-387	-440	-477	-500	-502	-487
120	+464	+455	+431	+392	+339	+273	+198	+116	+30	-57	-142	-222	-295	-357	-405	-440	-461	-462	-449
130	+412	+403	+382	+347	+301	+242	+176	+103	+27	-50	-126	-197	-262	-316	-360	-390	-409	-410	-399
140	+347	+340	+322	+292	+252	+203	+148	+ 87	+22	-42	-106	-166	-220	-266	-303	-328	-344	-345	-335
150	+272	+266	+252	+229	+198	+160	+115	+ 68	+17	-33	- 83	-130	-173	-209	-238	-257	-270	-271	-263
160	+188	+184	+175	+159	+138	+111	+ 80	+ 47	+12	-24	- 57	- 90	-120	-144	-164	-178	-187	-187	-182
170	+ 98	+ 96	+ 92	+ 83	+ 72	+ 58	+ 42	+ 25	+ 6	-13	- 30	- 47	- 63	- 76	- 86	- 94	- 98	- 98	- 96
180	+ 9	+ 8	+ 8	+ 7	+ 7	+ 6	+ 4	+ 2	+ 0	- 1	- 3	- 5	- 6	- 7	- 8	- 8	- 9	- 9	- 8
190	- 83	- 82	- 78	- 71	- 61	- 48	- 36	- 20	- 6	+10	+ 26	+ 40	+ 53	+ 64	+ 73	+ 80	+ 83	+ 83	+ 82
200	-173	-169	-160	-146	-126	-101	- 74	- 43	-12	+21	+ 54	+ 83	+110	+132	+151	+164	+172	+173	+168
210	-258	-253	-239	-217	-189	-151	-110	- 64	-17	+32	+ 80	+123	+164	+198	+226	+245	+256	+257	+250
220	-335	-328	-310	-283	-244	-197	-143	- 83	-22	+41	+102	+157	+213	+257	+292	+317	+332	+334	+324
230	-403	-394	-373	-339	-294	-235	-171	-100	-26	+50	+123	+192	+255	+308	+351	+381	+399	+401	+389
240	-457	-448	-424	-385	-334	-269	-194	-114	-30	+56	+140	+219	+290	+350	+399	+433	+454	+455	+442
250	-499	-489	-463	-420	-364	-293	-212	-124	-33	+61	+152	+239	+317	+382	+435	+472	+495	+497	+483
260	-526	-515	-488	-443	-384	-308	-223	-131	-34	+65	+161	+251	+334	+402	+459	+498	+522	+524	+509
270	-537	-526	-498	-452	-392	-318	-229	-134	-35	+66	+164	+257	+341	+412	+469	+509	+533	+535	+520
280	-532	-521	-493	-448	-389	-312	-226	-132	-35	+65	+163	+255	+338	+408	+465	+504	+528	+530	+515
290	-512	-498	-474	-431	-373	-300	-218	-127	-33	+63	+157	+245	+325	+392	+447	+485	+508	+510	+495
300	-476	-467	-442	-401	-347	-279	-203	-118	-31	+59	+145	+228	+302	+365	+416	+452	+473	+474	+460
310	-427	-418	-397	-359	-312	-251	-181	-106	-28	+52	+131	+205	+272	+327	+373	+405	+424	+425	+414
320	-365	-358	-339	-307	-267	-214	-156	- 91	-23	+45	+112	+174	+231	+280	+318	+346	+362	+363	+353
330	-292	-286	-271	-246	-213	-171	-125	- 73	-19	+36	+ 89	+140	+185	+224	+256	+277	+290	+291	+282
340	-211	-206	-195	-177	-153	-123	- 90	- 52	-13	+27	+ 64	+101	+134	+162	+184	+200	+209	+210	+204
350	-122	-120	-113	-102	- 89	- 72	- 51	- 30	- 8	+15	+ 37	+ 58	+ 78	+ 94	+107	+115	+121	+121	+118
360	- 31	- 31	- 30	- 27	- 23	- 19	- 13	- 7	- 2	+ 4	+ 10	+ 15	+ 20	+ 25	+ 28	+ 30	+ 31	+ 31	+ 31
370	+ 61	+ 60	+ 56	+ 49	+ 44	+ 36	+ 26	+ 15	+ 4	- 7	- 19	- 29	- 39	- 47	- 53	- 58	- 61	- 61	- 59
380	+151	+148	+140	+127	+109	+ 88	+ 64	+ 38	+10	-18	- 46	- 72	- 96	-116	-131	-143	-150	-150	-146
390	+237	+232	+220	+200	+173	+138	+101	+ 60	+16	-29	- 73	-113	-150	-182	-207	-227	-235	-236	-229
400	+316	+310	+293	+267	+230	+185	+134	+ 79	+21	-40	- 96	-150	-200	-243	-276	-300	-314	-315	-306

No Constant has been applied.

The unit equals 0<sup>d.00000</sup>.

This equation applies for Occultations only.

# SATELLITE IV

## Tables of the Phenomena

LIX *continued*

Equation of the Reduction

Occultations

$\gamma$	9 <sup>d</sup> 0	9 <sup>d</sup> 5	10 <sup>d</sup> 0	10 <sup>d</sup> 5	11 <sup>d</sup> 0	11 <sup>d</sup> 5	12 <sup>d</sup> 0	12 <sup>d</sup> 5	13 <sup>d</sup> 0	13 <sup>d</sup> 5	14 <sup>d</sup> 0	14 <sup>d</sup> 5	15 <sup>d</sup> 0	15 <sup>d</sup> 5	16 <sup>d</sup> 0	16 <sup>d</sup> 5	17 <sup>d</sup> 0	17 <sup>d</sup> 5	18 <sup>d</sup> 0
0	- 17	- 15	- 14	- 12	- 9	- 7	- 4	0	+ 3	+ 6	+ 9	+ 11	+ 13	+ 15	+ 17	+ 17	+ 17	+ 16	+ 15
10	-106	- 99	- 89	- 75	- 58	- 41	- 1	- 1	+19	+ 39	+ 58	+ 74	+ 88	+ 98	+106	+109	+108	+104	+ 96
20	-191	-179	-160	-135	-106	- 74	- 38	- 1	+35	+ 71	+105	+133	+158	+177	+190	+196	+195	+187	+174
30	-271	-253	- 28	-192	-151	- 15	- 54	- 2	+ 5	+101	+148	+19	+224	+251	+ 71	+ 79	+278	+267	+ 46
40	- 34	- 3	-287	- 43	-191	- 13	- 68	- 3	+64	+1 7	+187	+ 41	+294	+318	+34	+35	+350	+337	+31
50	-410	-378	-340	- 87	- 25	-156	- 81	- 3	+75	+150	+ 2	+ 83	+336	+376	+404	+416	+413	+398	+368
60	-454	- 45	-381	-322	-253	-175	- 91	- 3	+84	+169	+249	+318	+376	+42	+454	+467	+465	+447	+413
70	-490	-459	-411	-348	-274	-190	- 99	- 4	+91	+183	+269	+344	+4 7	+455	+490	+504	+50	+483	+446
80	-513	-480	-430	-364	- 86	-198	-103	- 4	+95	+192	+ 81	+359	+4 6	+477	+512	+5 7	+5 5	+504	+467
90	-5 0	-486	-436	-369	-290	- 01	-104	- 4	+97	+194	+ 85	+364	+431	+483	+519	+534	+532	+511	+473
100	-511	-478	-429	-363	-285	-197	- 1	- 4	+95	+191	+ 81	+358	+4 4	+475	+510	+525	+522	+50	+465
110	-487	-456	-409	-347	- 72	-188	- 97	- 3	+92	+18	+267	+34	+405	+453	+487	+501	+498	+480	+444
120	-449	- 41	-378	-318	-250	-173	- 90	- 3	+84	+166	+246	+315	+373	+417	+448	+461	+460	+443	+409
130	-399	-373	-334	-282	- 2	-153	- 80	- 3	+74	+149	+ 18	+280	+331	+370	+398	+409	+408	+392	+363
140	335	-313	- 81	-238	-186	- 13	- 67	-	+6	+124	+184	+235	+278	+312	+335	+345	+343	+330	+305
150	-263	- 46	- 21	-186	-146	-101	- 53	-	+49	+ 98	+144	+185	+218	+244	+262	+ 71	+ 70	+ 59	+240
160	-182	-171	-153	-129	-10	- 71	- 36	- 1	+34	+ 67	+100	+1 8	+151	+169	+182	+187	+187	+180	+165
170	- 96	- 90	- 80	- 68	- 54	- 37	- 19	0	+18	+ 36	+ 5	+ 67	+ 78	+ 89	+ 95	+ 98	+ 97	+ 94	+ 87
180	- 8	- 8	- 7	- 6	- 5	- 4	- 1		+1	+ 3	+ 5	+ 6	+ 7	+ 8	+ 8	+ 9	+ 9	+ 8	+ 8
190	+ 82	+ 76	+ 68	+ 57	+ 45	+ 31	+ 17	+ 1	-15	30	- 44	- 57	- 67	- 75	- 81	- 83	- 83	- 80	- 73
200	+168	+157	+141	+119	+ 93	+ 65	+ 34	+ 1	-31	- 6	- 9	-118	-139	155	-167	-172	-172	-165	-153
210	+250	+234	+210	+178	+140	+ 97	+ 50	+	-46	- 93	-137	-175	- 07	- 32	- 49	- 57	- 56	246	-228
220	+3 4	+3 3	+ 7	+2 9	+181	+125	+ 65	+	-60	-121	-177	- 28	- 69	-300	- 3 4	333	-332	319	-295
230	+389	+36	+327	+ 76	+197	+151	+ 78	+ 3	-73	-145	-214	-273	- 3 2	-361	-389	-400	-399	-383	-354
240	+44	+414	+371	+314	+ 46	+171	+ 88	+ 3	-83	-164	-242	-310	-367	-411	-44	-455	-454	-436	-402
250	+483	+452	+405	+34	+ 69	+184	+ 97	+ 3	-90	-180	- 65	-338	-401	-448	-48	-496	-494	-475	-439
260	+509	+476	+427	+361	+283	+197	+10	+ 4	-95	-190	- 79	-356	-422	-473	-508	-523	-520	-500	-463
270	+5 0	+486	+436	+369	+ 9	+ 01	+1 4	+ 4	-97	-194	85	-364	-431	-483	-519	534	-532	-511	-473
280	+515	+482	+432	+366	+ 86	+198	+103	+ 4	-96	-192	- 83	-361	-4 7	-479	-514	-5 9	-527	-506	-469
290	+495	+464	+416	+351	+ 76	+191	+ 99	+ 4	-9	-185	- 71	-349	-411	-460	-495	-509	-507	-487	-451
300	+460	+431	+386	+326	+257	+178	+ 93	+ 3	-86	-172	- 53	-323	-383	-428	-460	-473	-471	-454	-420
310	+414	+387	+347	+ 94	+231	+159	+ 83	+ 3	-77	-153	-227	- 90	-343	-384	-413	-4 5	-4 3	-407	-377
320	+353	+330	+ 96	+ 50	+197	+136	+ 71	+	-66	-132	-194	- 48	- 93	-328	-353	-363	-361	-348	-321
330	+ 82	+ 64	+237	+200	+158	+109	+ 57	+	-53	-106	-155	-199	- 35	- 63	- 28	-290	-289	-278	-258
340	+ 04	+190	+ 71	+144	+114	+ 79	+ 41	+ 1	-39	76	11	-143	-169	-189	-204	-209	-209	- 21	-185
350	+118	+111	+ 99	+ 84	+ 66	+ 45	+ 3	0	- 2	- 44	- 65	- 83	- 98	-110	-118	-121	-121	-116	-108
360	+ 31	+ 9	+ 5	+ 2	+ 17	+ 1	+ 6	0	- 6	- 1	- 16	- 1	- 5	- 28	- 30	- 31	- 31	- 30	- 28
370	- 59	- 55	-50	- 41	- 33	- 3	- 12	- 1	+10	+	+ 33	+ 4	+ 49	+ 56	+ 59	+ 61	+ 60	+ 58	+ 53
380	-146	-136	- 1	-103	- 81	- 54	- 29	- 1	+27	+ 54	+ 80	+ 1	+1 1	+135	+146	+150	+150	+144	+132
390	- 29	- 15	-19	-163	- 18	- 88	- 47	-	+42	+ 85	+1 6	+161	+ 90	+ 13	+229	+ 35	+234	+ 26	+209
400	-306	-286	- 57	-217	-170	-118	- 61	-	+57	+114	+167	+ 14	+ 54	+ 84	+305	+314	+313	+301	+278

N C t th b ppl d

Th t q l oooo

Phi q ti ppl f O ut ti ly

# SATELLITE IV

## Tables of the Phenomena

LX

Equation of the Reduction

Transits

J γ	0 <sup>d.0</sup> 0 <sup>d.5</sup> 1 <sup>d.0</sup>			1 <sup>d.5</sup> 2 <sup>d.0</sup> 2 <sup>d.5</sup>			3 <sup>d.0</sup> 3 <sup>d.5</sup> 4 <sup>d.0</sup>			4 <sup>d.5</sup> 5 <sup>d.0</sup> 5 <sup>d.5</sup>			6 <sup>d.0</sup> 6 <sup>d.5</sup> 7 <sup>d.0</sup>			7 <sup>d.5</sup> 8 <sup>d.0</sup> 8 <sup>d.5</sup>			9 <sup>d.0</sup>
d 0	- 23	- 23	- 22	- 20	- 17	- 13	- 10	- 6	- 1	+ 3	+ 7	+ 11	+ 14	+ 17	+ 20	+ 22	+ 23	+ 23	+ 22
10	-147	-144	-137	-125	-108	- 87	- 63	- 36	- 9	+18	+ 45	+ 71	+ 93	+114	+129	+140	+146	+146	+143
20	-266	-261	-247	-224	-194	-157	-113	- 67	-17	+32	+ 81	+128	+169	+204	+232	+252	+264	+265	+257
30	-379	-371	-351	-319	-276	-221	-161	- 94	-25	+46	+115	+181	+240	+290	+330	+359	+375	+377	+366
40	-478	-469	-444	-402	-349	-281	-204	-120	-31	+58	+145	+229	+304	+366	+417	+453	+474	+476	+462
50	-565	-554	-524	-476	-413	-332	-240	-141	-37	+70	+173	+270	+358	+433	+493	+536	+561	+563	+547
60	-635	-623	-589	-535	-463	-372	-271	-158	-41	+78	+194	+303	+403	+486	+554	+602	+630	+632	+613
70	-685	-672	-635	-578	-500	-404	-292	-171	-45	+84	+209	+329	+435	+525	+598	+650	+680	+682	+663
80	-717	-703	-665	-604	-523	-421	-305	-179	-46	+88	+219	+343	+455	+549	+626	+680	+711	+714	+693
90	-726	-712	-673	-612	-530	-426	-310	-181	-47	+89	+222	+347	+461	+556	+634	+688	+720	+723	+702
100	-714	-700	-663	-602	-521	-419	-305	-178	-46	+87	+218	+342	+453	+547	+622	+677	+708	+711	+690
110	-681	-668	-632	-575	-497	-400	-290	-171	-44	+83	+208	+326	+433	+521	+595	+646	+675	+678	+659
120	-629	-616	-582	-530	-458	-369	-269	-157	-40	+76	+192	+301	+399	+481	+548	+596	+623	+626	+607
130	-557	-546	-517	-470	-406	-327	-237	-139	-36	+67	+169	+266	+354	+426	+486	+528	+552	+555	+538
140	-469	-460	-440	-395	-342	-275	-199	-117	-30	+57	+143	+224	+297	+359	+409	+445	+465	+467	+453
150	-368	-361	-341	-310	-269	-216	-157	- 92	-23	+46	+112	+176	+234	+282	+320	+348	+365	+367	+356
160	-254	-249	-236	-215	-186	-149	-108	- 64	-18	+31	+ 77	+121	+161	+195	+222	+242	+252	+253	+246
170	-134	-131	-124	-112	- 97	- 78	- 57	- 34	- 9	+17	+ 40	+ 63	+ 85	+103	+117	+126	+133	+133	+130
180	- 11	- 11	- 10	- 9	- 8	- 7	- 6	- 3	- 1	+ 1	+ 3	+ 5	+ 7	+ 9	+ 9	+ 10	+ 11	+ 11	+ 11
190	+113	+111	+105	+ 94	+ 83	+ 66	+ 48	+ 28	+ 7	-14	- 35	- 54	- 72	- 87	- 99	-107	-112	-113	-110
200	+234	+230	+217	+198	+171	+138	+100	+ 59	+15	-29	- 72	-112	-149	-180	-204	-222	-232	-234	-227
210	+349	+342	+323	+295	+255	+205	+149	+ 87	+22	-43	-107	-167	-222	-267	-305	-331	-346	-348	-338
220	+453	+443	+420	+382	+330	+266	+193	+114	+30	-55	-138	-216	-288	-347	-395	-429	-449	-451	-438
230	+544	+533	+504	+458	+397	+319	+232	+136	+36	-67	-166	-260	-345	-417	-475	-515	-539	-542	-526
240	+617	+605	+573	+520	+451	+363	+263	+154	+40	-76	-189	-296	-392	-473	-539	-586	-612	-615	-598
250	+674	+661	+625	+568	+492	+397	+287	+169	+44	-83	-206	-322	-428	-517	-588	-639	-669	-671	-652
260	+710	+696	+659	+599	+519	+417	+303	+178	+46	-87	-217	-340	-451	-545	-620	-674	-704	-707	-686
270	+726	+712	+673	+612	+530	+426	+310	+181	+47	-89	-222	-347	-461	-556	-634	-688	-720	-723	-702
280	+719	+704	+667	+606	+525	+423	+307	+179	+46	-88	-219	-344	-457	-551	-628	-682	-713	-716	-695
290	+692	+678	+642	+583	+505	+406	+295	+174	+45	-84	-211	-331	-439	-530	-603	-656	-686	-689	-670
300	+644	+631	+597	+542	+470	+379	+275	+161	+41	-79	-197	-308	-409	-493	-561	-610	-638	-641	-623
310	+577	+566	+536	+486	+421	+339	+247	+144	+37	-73	-176	-276	-366	-442	-504	-547	-572	-575	-558
320	+493	+482	+457	+416	+360	+290	+210	+123	+31	-61	-151	-236	-313	-378	-430	-467	-489	-491	-477
330	+395	+387	+367	+333	+288	+233	+169	+ 99	+25	-49	-120	-189	-251	-302	-344	-375	-391	-393	-382
340	+285	+279	+264	+240	+208	+167	+121	+ 71	+18	-35	- 86	-136	-181	-218	-248	-270	-282	-284	-276
350	+166	+162	+154	+139	+120	+ 97	+ 70	+ 41	+11	-20	- 50	- 78	-106	-126	-144	-157	-165	-165	-160
360	+ 43	+ 43	+ 41	+ 36	+ 31	+ 25	+ 18	+ 11	+ 3	- 6	- 13	- 20	- 28	- 32	- 38	- 41	- 43	- 43	- 41
370	- 82	- 80	- 78	- 70	- 60	- 48	- 36	- 20	- 5	+10	+ 25	+ 39	+ 52	+ 63	+ 72	+ 78	+ 81	+ 82	+ 79
380	-204	-200	-189	-172	-149	-120	- 87	- 51	-13	+25	+ 62	+ 98	+130	+156	+177	+193	+202	+202	+197
390	-320	-314	-297	-270	-234	-188	-135	- 77	-20	+39	+ 97	+153	+203	+245	+279	+303	+317	+319	+310
400	-427	-418	-396	-360	-312	-252	-183	-107	-28	+52	+130	+204	+272	+327	+373	+405	+424	+425	+413

No Constant has been applied.

The unit equals 0<sup>d.00000</sup>.

This Equation applies for Transits only.

# SATELLITE IV

## Tables of the Phenomena

LX *continued*

Equation of the Reduction

Transits

J γ	9 <sup>d</sup> 0	9 <sup>d</sup> 5	10 <sup>d</sup> 0	10 <sup>d</sup> 5	11 <sup>d</sup> 0	11 <sup>d</sup> 5	12 <sup>d</sup> 0	12 <sup>d</sup> 5	13 <sup>d</sup> 0	13 <sup>d</sup> 5	14 <sup>d</sup> 0	14 <sup>d</sup> 5	15 <sup>d</sup> 0	15 <sup>d</sup> 5	16 <sup>d</sup> 0	16 <sup>d</sup> 5	17 <sup>d</sup> 0	17 <sup>d</sup> 5	18 <sup>d</sup> 0																	
a 0	+	+	0	+	19	+	16	+	12	+	9	+	4	0	-	4	-	8	-	1	-	15	-	18	-	2	-	2	-	3	-	3	-	2	-	20
10	+143	+133	+10	+1	+79	+53	+8	+1	-7	-54	-78	-10	-118	-13	-143	-146	-146	-140	-130																	
20	+57	+4	+16	+183	+143	+99	+51	+2	-48	-96	-14	-181	-13	-239	-57	-65	-64	-54	-235																	
30	+366	+342	+37	+60	+04	+142	+74	+3	-70	-136	-00	-56	-304	-340	-365	-376	-375	-360	-334																	
40	+462	+433	+388	+328	+258	+179	+93	+3	-85	-172	-253	-35	-383	430	-461	-475	-473	-456	-42																	
50	+547	+51	+459	+389	+305	+211	+11	+4	-10	-204	-300	-383	-453	-508	-546	-56	-560	-538	-498																	
60	+613	+574	+516	+437	+342	+37	+123	+4	-114	-28	337	-433	-509	-571	-613	-632	-69	-604	-559																	
70	+663	+619	+557	+471	+37	+256	+133	+4	-123	-47	-364	-464	-550	-616	-66	-682	-679	-652	-605																	
80	+693	+639	+583	+49	+386	+268	+139	+5	-19	-58	-380	-486	-575	-646	-692	-714	-710	-682	-63																	
90	+7	+657	+590	+499	+392	+271	+141	+5	-131	-62	-385	-49	-583	-653	-701	72	-719	-691	-640																	
100	+690	+647	+580	+491	+385	+67	+138	+4	-19	-58	-379	-484	-573	-642	-690	-711	-707	-680	-630																	
110	+659	+616	+554	+468	+368	+55	+133	+4	-123	-46	-362	-46	-546	-613	-658	-678	-675	-649	-601																	
120	+67	+568	+511	+432	+339	+235	+122	+4	-113	-226	-333	-426	-504	-565	-606	-626	-62	-598	-554																	
130	+538	+503	+453	+383	+300	+07	+108	+3	-100	-200	-294	-376	-445	-499	-537	-554	-55	-530	-491																	
140	+453	+44	+381	+322	+254	+174	+92	+1	-85	-169	-47	-318	376	-44	453	-466	-464	-446	-413																	
150	+356	+33	+99	+253	+199	+138	+71	+2	-66	-133	-195	-250	-94	-331	-355	-366	-365	350	-34																	
160	+46	+230	+07	+175	+136	+95	+50	+1	-45	-92	-135	-17	-204	-29	-246	-253	-252	-243	-224																	
170	+130	+1	+108	+91	+72	+5	+26	+1	-24	-49	-71	-91	-108	-11	-129	-133	-133	-128	-118																	
180	+11	+10	+9	+8	+6	+4	+2	0	-	-4	-6	-8	9	-10	-11	-11	-11	-11	-10																	
190	-110	-103	-9	-78	-61	-43	-22	-1	+20	+40	+60	+76	+91	+102	+109	+113	+112	+107	+100																	
200	-27	-1	-190	-161	-16	-87	-45	-2	+4	+84	+115	+159	+187	+210	+26	+233	+32	+23	+207																	
210	-338	-316	-84	-40	-188	-130	-67	-3	+63	+16	+185	+37	+280	+315	+337	+347	+346	+333	+308																	
220	-438	-410	-367	-311	-245	-17	-88	-3	+81	+163	+40	+307	+363	+408	+437	+450	+447	+431	+399																	
230	-526	-492	-442	-374	-294	-03	-106	-4	+98	+196	+88	+369	+436	+489	+525	+541	+539	+518	+479																	
240	-598	-559	-50	-425	-333	-231	-120	-4	+111	+223	+38	+419	+494	+556	+597	+614	+611	+588	+544																	
250	-65	-610	-547	-464	-364	-25	-131	-4	+11	+244	+357	+457	+541	+606	+651	+671	+668	+64	+594																	
260	-686	-64	-578	-489	-383	-65	-138	-4	+129	+57	+377	+482	+571	+639	+686	+707	+703	+676	+626																	
270	-70	-657	-59	-499	-39	-71	-141	-5	+131	+62	+385	+49	+583	+653	+701	+73	+719	+691	+640																	
280	-695	-65	-585	-494	-388	-268	-139	-5	+129	+60	+382	+487	+577	+647	+694	+716	+712	+684	+633																	
290	-670	-65	-56	-475	-373	-58	-135	-4	+125	+49	+366	+469	+555	+623	+668	+689	+686	+659	+609																	
300	-63	-583	-523	-443	-347	-24	-125	-4	+116	+33	+341	+437	+517	+580	+622	+641	+638	+613	+568																	
310	-558	-5	-469	-397	-312	-16	-112	-3	+104	+28	+306	+391	+464	+50	+557	+574	+57	+550	+509																	
320	-477	-446	-400	-339	-66	-184	-95	-2	+89	+178	+261	+334	+396	+443	+476	+491	+489	+469	+435																	
330	-382	-358	-321	-271	-213	-147	-76	-3	+71	+143	+21	+268	+317	+356	+381	+393	+391	+376	+348																	
340	-76	-58	-23	-196	-154	-107	-56	-2	+51	+13	+151	+193	+8	+257	+75	+83	+28	+272	+251																	
350	-160	-150	-134	-113	-89	-6	-3	-1	+3	+59	+88	+113	+133	+149	+159	+165	+164	+158	+146																	
360	-41	-38	-35	-29	-3	-16	-9	-1	+8	+16	+23	+29	+34	+38	+4	+43	+43	+41	+38																	
370	+79	+74	+67	+57	+44	+31	+16	-	-15	-3	-43	-55	-66	-73	-79	-81	-81	-79	-72																	
380	+197	+185	+165	+14	+110	+76	+39	+1	-36	-74	-108	-139	64	-183	-197	-203	-202	-194	-180																	
390	+310	+9	+61	+2	+172	+119	+6	+1	-57	-115	-170	-17	-57	-288	-308	-318	-317	-305	-282																	
400	+413	+386	+347	+294	+30	+160	+83	+3	-77	-154	-6	-289	-343	-384	-41	-425	-423	-406	-377																	

# SATELLITE IV

## Tables of the Phenomena

LXI

Corrections for Phase

Sh., Tr.

1	2	3	4	5
Correcting Factor for Semi-duration.	$\Delta$	$p$	Correcting Factor for Reduction.	$\Delta$
'00000	0	<sup>d</sup> <b>0'00</b>	'00000	0
- 1	- 1	<b>0'01</b>	0	0
3	3	<b>0'02</b>	- 1	0
6	4	<b>0'03</b>	1	- 1
11	6	<b>0'04</b>	2	2
17	7	<b>0'05</b>	4	2
- '00025	- 9	<b>0'06</b>	- '0005	- 2
34	10	<b>0'07</b>	7	2
45	12	<b>0'08</b>	9	2
57	13	<b>0'09</b>	11	3
70	14	<b>0'10</b>	14	3
- '00085	- 16	<b>0'11</b>	- '0017	- 3
101	17	<b>0'12</b>	20	4
119	19	<b>0'13</b>	24	4
138	20	<b>0'14</b>	28	4
158	21	<b>0'15</b>	32	4
- '00180	- 23	<b>0'16</b>	- '0036	- 5
203	24	<b>0'17</b>	41	5
228	26	<b>0'18</b>	46	5
254	27	<b>0'19</b>	51	6
281	28	<b>0'20</b>	57	6
- '00310	- 30	<b>0'21</b>	- '0062	- 6
341	32	<b>0'22</b>	68	7
373	33	<b>0'23</b>	75	7
406	34	<b>0'24</b>	82	7
440	35	<b>0'25</b>	88	7
- '00476	- 37	<b>0'26</b>	- '0096	- 8
513	38	<b>0'27</b>	103	8
552	40	<b>0'28</b>	111	8
592	41	<b>0'29</b>	119	9
- '00633	- 42	<b>0'30</b>	- '0128	- 9

1	2	3	4	5
Correcting Factor for Semi-duration.	$\Delta$	$p$	Correcting Factor for Reduction.	$\Delta$
- '00633	- 42	<sup>d</sup> <b>0'30</b>	- '0128	- 9
676	44	<b>0'31</b>	136	9
721	46	<b>0'32</b>	145	10
767	47	<b>0'33</b>	155	10
814	48	<b>0'34</b>	165	10
862	49	<b>0'35</b>	174	10
- '00911	- 50	<b>0'36</b>	- '0185	- 10
962	52	<b>0'37</b>	195	11
1015	54	<b>0'38</b>	206	11
1069	55	<b>0'39</b>	217	12
1125	57	<b>0'40</b>	229	12
- '01182	- 58	<b>0'41</b>	- '0240	- 12
1240	59	<b>0'42</b>	252	13
1300	61	<b>0'43</b>	265	13
1361	62	<b>0'44</b>	277	13
1423	63	<b>0'45</b>	290	13
- '01487	- 65	<b>0'46</b>	- '0303	- 14
1552	66	<b>0'47</b>	317	14
1618	67	<b>0'48</b>	331	14
1686	69	<b>0'49</b>	345	15
1755	71	<b>0'50</b>	360	15
- '01827	- 72	<b>0'51</b>	- '0375	- 15
1899	73	<b>0'52</b>	390	16
1972	74	<b>0'53</b>	406	16
2046	75	<b>0'54</b>	422	16
2122	77	<b>0'55</b>	438	16
- '02200	- 79	<b>0'56</b>	- '0454	- 17
2280	80	<b>0'57</b>	471	17
2360	81	<b>0'58</b>	488	18
2442	82	<b>0'59</b>	506	18
- '02524	- 82	<b>0'60</b>	- '0524	- 18

The Argument is the Annual Parallax,  $p$ , as computed from the Approximate Tables IV, V, VI.

Columns 1, 4 give factors which must be multiplied respectively into the Semiduration as taken from Tables XLII-LI, and the Reduction as taken from Tables LII-LX, and the products taken as further corrections of these quantities.

When  $p$  is positive, these corrections apply to *Ingress* for the Shadow and *Egress* for the Transit of Disc; when  $p$  is negative, they apply to *Egress* for the Shadow and *Ingress* for the Transit of Disc.

# SATELLITE IV

## Tables of the Phenomena

LXII

Light Curves in Eclipse

L t (h) <sub>0</sub>	1 50	2 00	2 10	2 20	2 30	2 40	2 45	2 46	2 47	2 48	2 49	L t (h) <sub>0</sub>
		1 00	0 90	0 80	0 70	0 60	0 55	0 54	0 53	0 52	0 51	
-20	0 01	0 1	0 01	0 01	0 01	0 00	00	0 00	0 00	0 00	0 00	-20
18	02	0	0	0 0	0 02	0 01	0 00	0 00	0 0	0 00	0 00	18
16	0 4	0 04	0 04	4	0 04	0 03	0 01	0 0	0 0	0 00	0 00	16
14	0 07	0 07	0 7	0 7	0 07	0 6	0 03	0 03	0 02	0 01	0 00	14
12	1	0 1	0 1	0 1	0 1	0 10	0 08	0 07	0 06	0 03	0 1	12
-10	0 17	0 17	0 17	0 17	0 17	0 16	0 14	0 13	0 1	0 1	0 4	-10
08	0 5	5	0 5	0 25	5	4	0 33	0 3	0 31	0 30	0 25	08
06	0 35	0 35	35	0 35	35	0 34	45	0 45	0 44	0 43	0 41	06
04	0 46	0 46	46	0 46	0 46	0 46	0 6	0 60	0 60	0 59	0 59	04
-02	0 6	0 60	60	0 60	0 60	0 60	0 75	0 75	0 75	0 75	0 75	-02
00	0 75	75	0 75	0 75	0 75	0 75	0 94	0 94	0 94	0 94	0 93	00
+02	0 94	94	0 94	94	0 94	0 94	1 16	1 13	1 1	1 10	1 06	+02
04	1 16	1 16	1 16	1 16	1 16	1 16	1 35	1 34	1 3	1 26	1 15	04
06	1 4	1 4	1 40	1 4	1 40	1 38	1 58	1 56	1 51	1 42	1 17	06
08	1 72	1 70	1 70	1 70	1 68	1 64	1 86	1 80	1 72	1 55	1 17	08
+10	07	03	03	3	00	1 95	1 3	03	1 90	1 66	1 10	+10
12	48	2 42	40	2 38	36	2 29	39	6	2 07	1 74	0 98	12
14	97	86	2 84	2 8	80	2 68	2 68	50	2 25	1 79	0 83	14
16	3 60	3 45	3 43	3 40	3 3	3 11	99	2 72	2 35	1 78	0 67	16
18	4 31	4 1	4 08	4 05	3 91	3 60	3 31	2 9	2 4	1 74	0 48	18
+20	5 45	4 95	4 88	4 77	4 60	4 12						+20

l i t l l g l f  
y l t l l t l f  
f m g i t l f t l  
s t l l t l l i  
p d l t l  
l d i t (k) (k)  
i p l t l t l  
t l l i l t l  
l t l l i (k)  
t l f t l  
l t l l f t l  
S l l w i l l i  
t f l y t l i f  
J p l t f  
t h t f t l  
S t l l t d i

LXIII

Mean Motion in Light Curve

Lat	$\Delta(l)_{\text{peri}}$	3	Lat	Lat	$\Delta(l)_{\text{peri}}$	Lat	Lat	$\Delta(l)_{\text{peri}}$	Lat
0 50	0000		2 50	0 70	0280	2 30	1 10	00441	1 90
51	64	46	2 49	72	292	2 28	1 12	445	1 88
52	91	24	2 48	74	304	2 26	1 14	449	1 86
53	111	19	2 47	76	315	2 24	1 16	453	1 84
54	1 9	16	2 46	78	3 6	2 22	1 18	457	1 82
55	143	14	2 45	80	336	2 20	1 20	460	1 80
0 56	00156	13	2 44	0 82	00345	2 18	1 22	00463	1 78
57	168	12	2 43	84	354	2 16	1 24	466	1 76
58	180	11	2 42	86	363	2 14	1 26	469	1 74
59	190	1	2 41	88	37	2 12	1 28	47	1 72
60	200	10	2 40	90	380	2 10	1 30	474	1 70
0 61	00210	10	2 39	0 92	00388	2 08	1 32	00476	1 68
62	219	9	2 38	94	395	2 06	1 34	478	1 66
63	228	9	2 37	96	40	2 04	1 36	480	1 64
64	36	8	2 36	98	408	2 02	1 38	481	1 62
65	244	8	2 35	1 00	414	2 00	1 40	48	1 60
0 66	00 5	8	2 34	1 02	0042	1 98	1 42	00483	1 58
67	259	7	2 33	1 04	4 5	1 96	1 44	484	1 56
68	266	7	2 32	1 06	43	1 94	1 46	485	1 54
69	73	7	2 31	1 08	435	1 92	1 48	485	1 52
0 70	00280	7	2 30	1 10	0 441	1 90	1 50	00486	1 50

Th T bl t l t f h g f th C d te (k) with th tim It m t b t d by th  
Eq t l f T bl LXIV d th th ig t t h d i + f di pp f pp

LXIV

Equation of Motion

Var	- 02 - 01	00	+ 01 + 02	V r
Lat				Lat
1 50	+ 5 + 2	0	- 2 - 5	1 50
2 00	6 3	0	3 6	1 00
2 10	6 3	0	3 6	0 90
2 20	7 3	0	3 7	0 80
2 30	8 4	0	4 8	0 70
2 40	11 5	0	5 11	0 60
2 45	+15 + 7	0	- 7 - 15	0 55
2 46	17 8	0	8 17	0 54
2 47	19 10	0	10 19	0 53
2 48	4 1	0	12 24	0 52
2 49	+34 +17	0	-17 -34	0 51

Tl D l t l f t l T l l t b t k r r t l t  
t l t f T bl LXII Tl l t q l 0000





AUXILIARY TABLES  
of  
Jupiter's Orbit,  
The Equation of Light,  
and  
Conversions to the Decimal System

# AUXILIARY TABLES

C

Node of Jupiter's Orbit

Year	Ascending Node	$\Delta$ 10 <sup>y</sup>
1850	98 56.1	6.1
60	99 2.2	6.1
70	8.3	6.1
80	14.4	6.2
90	20.6	6.2
1900	26.7	6.1
10	32.8	6.1
20	38.9	6.2
30	45.1	6.2
40	51.2	6.1
50	99 57.3	6.1
60	100 3.4	6.2
70	9.6	6.2
80	15.7	6.1
90	21.8	6.1
2000	100 27.9	6.1

This Table shows the longitude of the ascending Node of Jupiter's Orbit upon the mean ecliptic of date.

CI

Reduction from Ecliptic to Jupiter's Orbit

Ecliptic Longitude—Node				Reduction 1900	$\Delta$ 10'	Variation per 100 <sup>y</sup>	Ecliptic Longitude—Node			
°	'	°	'	"			°	'	°	'
0	90	180	270	0.0	.16	0.0	90	180	270	360
2	88	182	268	+ 1.9 -	.16	0.0	92	178	272	358
4	86	184	266	3.8	.16	0.0	94	176	274	356
6	84	186	264	5.6	.15	- 0.1 +	96	174	276	354
8	82	188	262	7.4	.15	0.1	98	172	278	352
10	80	190	260	9.2	.15	0.1	100	170	280	350
12	78	192	258	11.0	.14	0.1	102	168	282	348
14	76	194	256	12.6	.14	0.1	104	166	284	346
16	74	196	254	14.3	.13	0.1	106	164	286	344
18	72	198	252	15.8	.13	0.1	108	162	288	342
20	70	200	250	17.3	.12	0.2	110	160	290	340
22	68	202	248	18.7	.11	0.2	112	158	292	338
24	66	204	246	20.0	.11	0.2	114	156	294	336
26	64	206	244	21.2	.10	0.2	116	154	296	334
28	62	208	242	22.3	.09	0.2	118	152	298	332
30	60	210	240	23.3	.08	0.2	120	150	300	330
32	58	212	238	24.2	.07	0.2	122	148	302	328
34	56	214	236	25.0	.06	0.2	124	146	304	326
36	54	216	234	25.6	.05	0.2	126	144	306	324
38	52	218	232	26.1	.04	0.2	128	142	308	322
40	50	220	230	26.5	.03	0.2	130	140	310	320
42	48	222	228	26.8	.02	0.2	132	138	312	318
44	46	224	226	+ 26.9 -	.01	- 0.2 +	134	136	314	316

This Equation to be applied to Ecliptic Longitude of Jupiter to give Orbit Longitude.  
The Argument is the *Ecliptic Longitude* minus *Longitude of Node* from Table C.  
The sign follows the side on which the Argument is found.

Reduction of Annual Parallax to Jupiter's Orbit

CII

$\beta$	Factor	$\Delta$ 1 <sup>d</sup>	$\beta$	Factor	$\Delta$ 1 <sup>d</sup>
<sup>d</sup> 0	+ .235	0.0	<sup>d</sup> 200	- .163	0.0
10	.230	- 0.9	210	.161	+ 0.3
20	.217	1.8	220	.157	0.6
30	.193	2.7	230	.150	0.8
40	.164	3.1	240	.141	1.0
50	.131	3.5	250	.130	1.3
60	.094	3.6	260	.116	1.5
70	.059	3.5	270	.100	1.7
80	+ .024	3.4	280	.082	2.1
90	- .008	3.2	290	.059	2.5
100	.037	2.7	300	.033	2.8
110	.062	2.3	310	- .004	3.1
120	.083	2.0	320	+ .028	3.3
130	.102	1.8	330	.062	3.6
140	.118	1.5	340	.099	3.6
150	.131	1.2	350	.134	3.4
160	.142	1.0	360	.167	3.1
170	.151	0.8	370	.195	2.6
180	.158	0.6	380	.218	1.8
190	.162	- 0.3	390	.231	+ 0.9
200	- .163	0.0	400	+ .235	0.0

CIII

p	Correction	p	Correction
<sup>c</sup> 0	" 0.0	<sup>c</sup> ± 6	" ± 5.6
± 1	± 0.9	7	6.5
2	1.8	8	7.4
3	2.8	9	8.4
4	3.7	10	9.3
5	4.6	11	10.3
± 6	± 5.6	± 12	± 11.3

Tables CII, CIII apply when the Annual Parallax has been computed from the *ecliptic longitudes* of Jupiter and the Sun, and supply corrections for reducing it to Jupiter's Orbit.

Table CII: take out the factor with Argument  $\beta$ , multiply it into the sum of the two equations taken out from Table CI with the arguments respectively:—*Sun's Longitude* minus *Jupiter's Ascending Node*, *Jupiter's Longitude* minus *Ascending Node*, and add the product to the computed Annual Parallax.

Table CIII: take out the correction with argument  $p$ , the Annual Parallax, and apply it to the computed value of  $p$ .

# AUXILIARY TABLES

CIV

The Equation of Light

		3			3			3			3			3
Log Dist	Equat on	Δ	Log Dist	Equation	Δ	Log Dist	Equat on	Δ	Log Dist	Equat on	Δ	Log Dist	Equation	Δ
585	0 2193	+ 51	635	0 0 49 1	+ 58	685	0 27939	+ 64	735	0 031348	+ 72	785	0 035173	+ 81
6	244	51	6	958	58	6	028003	65	6	4	73	6	54	81
7	95	5	7	025 16	58	7	068	65	7	493	73	7	335	82
8	347	5	8	073	58	8	133	65	8	565	73	8	417	82
9	398	5	9	131	58	9	197	65	9	638	73	9	498	82
590	45	5	640	189	58	690	26	66	740	711	73	790	580	82
591	0 5 1	+ 5	641	025 47	+ 58	691	83 8	+ 66	741	031784	+ 73	791	03566	+ 83
2	553	5	2	305	59	2	393	65	2	857	74	2	745	83
3	605	52	3	364	59	3	458	66	3	931	74	3	827	83
4	657	53	4	422	59	4	5 4	66	4	03 004	74	4	910	83
5	710	53	5	481	59	5	590	66	5	078	74	5	992	83
596	02276	+ 52	646	025539	+ 59	696	028656	+ 66	746	03 15	+ 74	796	036075	+ 83
7	814	53	7	598	59	7	72	66	7	6	75	7	158	84
8	867	53	8	657	59	8	788	66	8	301	75	8	242	84
9	92	53	9	716	60	9	854	67	9	315	75	9	3 5	84
600	973	53	650	776	60	700	9 1	67	750	450	75	800	409	84
601	3026	+ 53	651	0 5835	+ 60	701	0 8987	+ 67	751	03 5 1	+ 75	801	036493	+ 84
2	0 9	53	2	895	60	2	029054	67	2	599	76	2	577	84
3	13	53	3	954	6	3	1 1	67	3	675	76	3	661	85
4	185	54	4	0 6014	60	4	188	68	4	750	75	4	746	85
5	39	54	5	74	60	5	256	68	5	8 5	76	5	831	85
606	023 9	+ 54	656	026134	+ 60	706	0 93 3	+ 68	756	032901	+ 76	806	036916	+ 85
7	346	54	7	194	61	7	39	68	7	977	76	7	037001	85
8	400	54	8	55	61	8	458	68	8	033053	76	8	086	85
9	454	54	9	315	61	9	5 6	68	9	1 9	76	9	171	86
610	5 8	54	660	376	61	710	594	69	760	05	77	810	257	86
611	0 3562	+ 54	661	026437	+ 61	711	0 9663	+ 69	761	033 8	+ 77	811	037343	+ 86
2	616	55	2	498	61	2	731	69	2	359	77	2	429	86
3	671	55	3	559	61	3	800	69	3	436	77	3	515	87
4	7 5	55	4	620	61	4	868	69	4	513	77	4	602	87
5	78	55	5	681	6	5	937	69	5	590	77	5	689	87
616	023835	+ 55	666	0 6743	+ 6	716	030006	+ 69	766	033667	+ 78	816	037775	+ 87
7	890	55	7	805	62	7	075	70	7	745	78	7	863	88
8	945	55	8	866	6	8	145	70	8	823	78	8	950	87
9	0 40 0	55	9	9 8	6	9	214	70	9	901	78	9	038037	88
620	055	56	670	990	63	720	84	70	770	179	78	820	0381 5	+ 88
621	0 4111	+ 56	671	0 7 53	+ 63	721	30354	+ 7	771	034057	+ 79	CV Correction of the Equation		
2	166	56	2	115	63	2	4 4	7	2	136	79			
3	2	56	3	178	63	3	494	70	3	214	79			
4	78	56	4	4	63	4	564	70	4	293	79			
5	334	56	5	303	63	5	634	71	5	37	8			
626	024390	+ 56	676	027366	+ 63	726	030705	+ 71	776	03445	+ 80	CV Correction of the Equation		
7	446	56	7	4 9	63	7	776	71	7	531	80			
8	502	57	8	492	64	8	847	71	8	611	80			
9	559	57	9	556	64	9	918	71	9	690	80			
630	616	57	680	619	64	730	989	72	780	770	8			
631	02467	+ 57	681	0 7683	+ 64	731	031061	+ 72	781	034851	+ 81	CV Correction of the Equation		
2	7 9	57	2	747	64	2	13	72	2	931	80			
3	786	57	3	810	64	3	04	7	3	035011	81			
4	843	58	4	875	65	4	76	72	4	092	81			
635	024901	+ 58	685	027939	+ 64	735	031348	+ 7	785	035173	+ 81			

# AUXILIARY TABLES

CVI

Minutes and Seconds of Arc in Decimals of a Degree

I	2	I	2
/	0	/	0
1	'01667	51	'85000
2	'03333	52	'86667
3	'05000	53	'88333
4	'06667	54	'90000
5	'08333	55	'91667
6	'10000	56	'93333
7	'11667	57	'95000
8	'13333	58	'96667
9	'15000	59	'98333
10	'16667	60	1'00000
11	'18333	61	1'01667
12	'20000	62	1'03333
13	'21667	63	1'05000
14	'23333	64	1'06667
15	'25000	65	1'08333
16	'26667	66	1'10000
17	'28333	67	1'11667
18	'30000	68	1'13333
19	'31667	69	1'15000
20	'33333	70	1'16667
21	'35000	71	1'18333
22	'36667	72	1'20000
23	'38333	73	1'21667
24	'40000	74	1'23333
25	'41667	75	1'25000
26	'43333	76	1'26667
27	'45000	77	1'28333
28	'46667	78	1'30000
29	'48333	79	1'31667
30	'50000	80	1'33333
31	'51667	81	1'35000
32	'53333	82	1'36667
33	'55000	83	1'38333
34	'56667	84	1'40000
35	'58333	85	1'41667
36	'60000	86	1'43333
37	'61667	87	1'45000
38	'63333	88	1'46667
39	'65000	89	1'48333
40	'66667	90	1'50000
41	'68333	91	1'51667
42	'70000	92	1'53333
43	'71667	93	1'55000
44	'73333	94	1'56667
45	'75000	95	1'58333
46	'76667	96	1'60000
47	'78333	97	1'61667
48	'80000	98	1'63333
49	'81667	99	1'65000
50	'83333	100	1'66667

I	2	I	2
//	0	//	0
1	'00028	51	'01417
2	56	52	1444
3	83	53	1472
4	111	54	1500
5	139	55	1528
6	'00167	56	'01556
7	194	57	1583
8	222	58	1611
9	250	59	1639
10	278	60	1667
11	'00306	61	'01694
12	333	62	1722
13	361	63	1750
14	389	64	1778
15	417	65	1806
16	'00444	66	'01833
17	472	67	1861
18	500	68	1889
19	528	69	1917
20	556	70	1944
21	'00583	71	'01972
22	611	72	2000
23	639	73	2028
24	667	74	2056
25	694	75	2083
26	'00722	76	'02111
27	750	77	2139
28	778	78	2167
29	806	79	2194
30	833	80	2222
31	'00861	81	'02250
32	889	82	2278
33	917	83	2306
34	944	84	2333
35	972	85	2361
36	'01000	86	'02389
37	1028	87	2417
38	1056	88	2444
39	1083	89	2472
40	1111	90	2500
41	'01139	91	'02528
42	1167	92	2556
43	1194	93	2583
44	1222	94	2611
45	1250	95	2639
46	'01278	96	'02667
47	1306	97	2694
48	1333	98	2722
49	1361	99	2750
50	'01389	100	'02778

# AUXILIARY TABLES

CVII

Decimals of a Degree in Minutes and Seconds of Arc

01	0 36	51	30 36
02	1 1	52	31 1
03	1 48	53	31 48
04	2 24	54	32 4
05	3	55	33
06	3 36	56	33 36
07	4 1	57	34 12
08	4 48	58	34 48
09	5 24	59	35 4
10	6 0	60	36 0
11	6 36	61	36 36
12	7 1	62	37 12
13	7 48	63	37 48
14	8 4	64	38 4
15	9 0	65	39
16	9 36	66	39 36
17	10 1	67	40 12
18	10 48	68	40 48
19	11 4	69	41 24
20	12 0	70	42 0
21	12 36	71	42 36
22	13 1	72	43 12
23	13 48	73	43 48
24	14 4	74	44 4
25	15 0	75	45 0
26	15 36	76	45 36
27	16 1	77	46 1
28	16 48	78	46 48
29	17 4	79	47 24
30	18 0	80	48 0
31	18 36	81	48 36
32	19 1	82	49 1
33	19 48	83	49 48
34	0 4	84	50 4
35	1 0	85	51
36	1 36	86	51 36
37	2 1	87	52 1
38	2 48	88	52 48
39	3 4	89	53 4
40	24 0	90	54 0
41	4 36	91	54 36
42	5 1	92	55 1
43	5 48	93	55 48
44	6 4	94	56 4
45	7 0	95	57 0
46	27 36	96	57 36
47	28 1	97	58 12
48	8 48	98	58 48
49	29 4	99	59 4
50	3 0	1 00	60 0

0001	0 36	0051	18 36
2	0 7	52	18 7
3	1 08	53	19 08
4	1 44	54	19 44
5	1 8	55	19 80
0006	16	0056	20 16
7	2 5	57	20 5
8	88	58	20 88
9	3 4	59	1 4
10	3 6	60	21 60
0011	3 96	0061	21 96
12	4 3	62	32
13	4 68	63	22 68
14	5 04	64	23 04
15	5 40	65	23 40
0016	5 76	0066	23 76
17	6 1	67	24 12
18	6 48	68	4 48
19	6 84	69	24 84
20	7 20	70	25 20
0021	7 56	0071	25 56
22	7 9	72	25 92
23	8 28	73	26 8
24	8 64	74	26 64
25	9 00	75	7 00
0026	9 36	0076	27 36
27	9 72	77	7 7
28	10 08	78	28 08
29	1 44	79	28 44
30	10 80	80	8 80
0031	11 16	0081	29 16
32	11 52	82	29 52
33	11 88	83	29 88
34	12 4	84	30 24
35	12 60	85	30 60
0036	1 96	0086	30 96
37	13 32	87	31 32
38	13 68	88	31 68
39	14 04	89	3 04
40	14 40	90	3 40
0041	14 76	0091	32 76
42	15 12	92	33 12
43	15 48	93	33 48
44	15 84	94	33 84
45	16 20	95	34
0046	16 56	0096	34 56
47	16 92	97	34 92
48	17 8	98	35 8
49	17 64	99	35 64
0050	18 0	0100	36 00

# AUXILIARY TABLES

CVIII

Decimals of a Day in Hours, Minutes and Seconds.

I	2	I	2
Days	H., M., S.	Days	H., M., S.
d	h m s	d	h m s
0'01	0 14 24'00	0'51	12 14 24'00
0'02	0 28 48'00	0'52	12 28 48'00
0'03	0 43 12'00	0'53	12 43 12'00
0'04	0 57 36'00	0'54	12 57 36'00
0'05	1 12 0'00	0'55	13 12 0'00
0'06	1 26 24'00	0'56	13 26 24'00
0'07	1 40 48'00	0'57	13 40 48'00
0'08	1 55 12'00	0'58	13 55 12'00
0'09	2 9 36'00	0'59	14 9 36'00
0'10	2 24 0'00	0'60	14 24 0'00
0'11	2 38 24'00	0'61	14 38 24'00
0'12	2 52 48'00	0'62	14 52 48'00
0'13	3 7 12'00	0'63	15 7 12'00
0'14	3 21 36'00	0'64	15 21 36'00
0'15	3 36 0'00	0'65	15 36 0'00
0'16	3 50 24'00	0'66	15 50 24'00
0'17	4 4 48'00	0'67	16 4 48'00
0'18	4 19 12'00	0'68	16 19 12'00
0'19	4 33 36'00	0'69	16 33 36'00
0'20	4 48 0'00	0'70	16 48 0'00
0'21	5 2 24'00	0'71	17 2 24'00
0'22	5 16 48'00	0'72	17 16 48'00
0'23	5 31 12'00	0'73	17 31 12'00
0'24	5 45 36'00	0'74	17 45 36'00
0'25	6 0 0'00	0'75	18 0 0'00
0'26	6 14 24'00	0'76	18 14 24'00
0'27	6 28 48'00	0'77	18 28 48'00
0'28	6 43 12'00	0'78	18 43 12'00
0'29	6 57 36'00	0'79	18 57 36'00
0'30	7 12 0'00	0'80	19 12 0'00
0'31	7 26 24'00	0'81	19 26 24'00
0'32	7 40 48'00	0'82	19 40 48'00
0'33	7 55 12'00	0'83	19 55 12'00
0'34	8 9 36'00	0'84	20 9 36'00
0'35	8 24 0'00	0'85	20 24 0'00
0'36	8 38 24'00	0'86	20 38 24'00
0'37	8 52 48'00	0'87	20 52 48'00
0'38	9 7 12'00	0'88	21 7 12'00
0'39	9 21 36'00	0'89	21 21 36'00
0'40	9 36 0'00	0'90	21 36 0'00
0'41	9 50 24'00	0'91	21 50 24'00
0'42	10 4 48'00	0'92	22 4 48'00
0'43	10 19 12'00	0'93	22 19 12'00
0'44	10 33 36'00	0'94	22 33 36'00
0'45	10 48 0'00	0'95	22 48 0'00
0'46	11 2 24'00	0'96	23 2 24'00
0'47	11 16 48'00	0'97	23 16 48'00
0'48	11 31 12'00	0'98	23 31 12'00
0'49	11 45 36'00	0'99	23 45 36'00
0'50	12 0 0'00	1'00	24 0 0'00

I	2	I	2
Days	Min., Sec.	Days	Min., Sec.
d	m s	d	m s
0001	0 8'64	0051	7 20'64
2	0 17'28	52	7 29'28
3	0 25'92	53	7 37'92
4	0 34'56	54	7 46'56
5	0 43'20	55	7 55'20
0006	0 51'84	0056	8 3'84
7	1 0'48	57	8 12'48
8	1 9'12	58	8 21'12
9	1 17'76	59	8 29'76
10	1 26'40	60	8 38'40
0011	1 35'04	0061	8 47'04
12	1 43'68	62	8 55'68
13	1 52'32	63	9 4'32
14	2 0'96	64	9 12'96
15	2 9'60	65	9 21'60
0016	2 18'24	0066	9 30'24
17	2 26'88	67	9 38'88
18	2 35'52	68	9 47'52
19	2 44'16	69	9 56'16
20	2 52'80	70	10 4'80
0021	3 1'44	0071	10 13'44
22	3 10'08	72	10 22'08
23	3 18'72	73	10 30'72
24	3 27'36	74	10 39'36
25	3 36'00	75	10 48'00
0026	3 44'64	0076	10 56'64
27	3 53'28	77	11 5'28
28	4 1'92	78	11 13'92
29	4 10'56	79	11 22'56
30	4 19'20	80	11 31'20
0031	4 27'84	0081	11 39'84
32	4 36'48	82	11 48'48
33	4 45'12	83	11 57'12
34	4 53'76	84	12 5'76
35	5 2'40	85	12 14'40
0036	5 11'04	0086	12 23'04
37	5 19'68	87	12 31'68
38	5 28'32	88	12 40'32
39	5 36'96	89	12 48'96
40	5 45'60	90	12 57'60
0041	5 54'24	0091	13 6'24
42	6 2'88	92	13 14'88
43	6 11'52	93	13 23'52
44	6 20'16	94	13 32'16
45	6 28'80	95	13 40'80
0046	6 37'44	0096	13 49'44
47	6 46'08	97	13 58'08
48	6 54'72	98	14 6'72
49	7 3'36	99	14 15'36
0050	7 12'00	0100	14 24'00

I	2	I	2
Days	Sec.	Days	Sec.
d	s	d	s
000001	0'09	000051	4'41
2	0'17	52	4'49
3	0'26	53	4'58
4	0'35	54	4'67
5	0'43	55	4'75
000006	0'52	000056	4'84
7	0'61	57	4'93
8	0'69	58	5'01
9	0'78	59	5'10
10	0'86	60	5'18
000011	0'95	000061	5'27
12	1'04	62	5'36
13	1'12	63	5'44
14	1'21	64	5'53
15	1'30	65	5'62
000016	1'38	000066	5'70
17	1'47	67	5'79
18	1'56	68	5'88
19	1'64	69	5'96
20	1'73	70	6'05
000021	1'81	000071	6'13
22	1'90	72	6'22
23	1'99	73	6'31
24	2'07	74	6'39
25	2'16	75	6'48
000026	2'25	000076	6'57
27	2'33	77	6'65
28	2'42	78	6'74
29	2'51	79	6'83
30	2'59	80	6'91
000031	2'68	000081	7'00
32	2'77	82	7'09
33	2'85	83	7'17
34	2'94	84	7'26
35	3'02	85	7'34
000036	3'11	000086	7'43
37	3'20	87	7'52
38	3'28	88	7'60
39	3'37	89	7'69
40	3'46	90	7'78
000041	3'54	000091	7'86
42	3'63	92	7'95
43	3'72	93	8'04
44	3'80	94	8'12
45	3'89	95	8'21
000046	3'97	000096	8'29
47	4'06	97	8'38
48	4'15	98	8'47
49	4'23	99	8'55
000050	4'32	000100	8'64

# AUXILIARY TABLES

CIX

Hours, Minutes and Seconds in Decimals of a Day

Hours	Days	Hou s	Days	Min	Days	M n	D ys	S c	Day	Sec	Days
0	00 000	50	083333	0	0 0 00	50	<sup>d</sup> 34722	0	<sup>d</sup> 0 00 0	50	000579
1	41667	51	1 5 0	1	694	51	35417	1	12	51	590
2	083333	52	166667	2	1389	52	36111	2	23	52	60
3	1250	53	8333	3	83	53	36806	3	35	53	613
4	166667	54	25 00	4	778	54	37500	4	46	54	625
5	08333	55	91667	5	347	55	38194	5	58	55	637
6	50000	56	333333	6	004167	56	38889	6	000069	56	000648
7	9 667	57	37500	7	4861	57	39583	7	81	57	660
8	333333	58	416667	8	5556	58	40 78	8	93	58	671
9	375000	59	458333	9	6 50	59	4097	9	104	59	683
10	4 6667	60	2 5 00 0	10	6944	60	41667	10	116	60	694
11	458333	61	541667	11	007639	61	04 361	11	0001 7	61	000706
12	5 0000	62	2 583333	12	8333	62	43056	12	139	62	718
13	541667	63	625 00	13	90 8	63	43750	13	150	63	729
14	583333	64	666667	14	97 2	64	44444	14	162	64	741
15	6 5000	65	2 708333	15	1 417	65	45139	15	174	65	752
16	666667	66	2 750000	16	011111	66	045833	16	000185	66	000764
17	7 8333	67	2 791667	17	11806	67	465 8	17	197	67	775
18	75 000	68	833333	18	1 500	68	47 22	18	208	68	787
19	791667	69	875 0	19	13194	69	47917	19	0	69	799
20	833333	70	916667	20	13889	70	48611	20	231	70	810
21	8750 0	71	958333	21	014583	71	049306	21	000243	71	000822
22	916667	72	3 000 00	22	15 76	72	500 0	22	255	72	833
23	958333	73	3 041667	23	1597	73	50694	23	66	73	845
24	1 0 00	74	3 83333	24	16667	74	51389	24	76	74	856
25	1 41667	75	3 1 5	25	17361	75	5 83	25	83	75	868
26	1 83333	76	3 166667	26	018 56	76	05 778	26	000301	76	000880
27	1 1 50	77	3 8333	27	1875	77	5347	27	31	77	891
28	1 166667	78	3 500	28	19444	78	54167	28	324	78	903
29	1 8333	79	3 91667	29	0139	79	54861	29	336	79	914
30	1 5 0	80	3 333333	30	0633	80	55556	30	347	80	926
31	1 91667	81	3 375 0	31	0 15 8	81	056 50	31	000359	81	000937
32	1 333333	82	3 416667	32		82	56944	32	370	82	949
33	1 3750	83	3 458333	33	2917	83	57639	33	38	83	961
34	1 416667	84	3 500000	34	23611	84	58333	34	394	84	972
35	1 458333	85	3 54166	35	43 6	85	59028	35	405	85	984
36	1 5 0	86	3 583333	36	250 0	86	0597	36	000417	86	000995
37	1 54 667	87	3 6 5	37	5694	87	60417	37	4 8	87	1007
38	1 583333	88	3 666667	38	6389	88	61111	38	440	88	1019
39	1 6 500	89	3 7 8333	39	7 83	89	61806	39	451	89	1030
40	1 666667	90	3 75000	40	7778	90	62500	40	463	90	1042
41	1 7 8333	91	3 791667	41	0 847	91	63194	41	00475	91	001053
42	1 75 0	92	3 833333	42	9167	92	63889	42	486	92	1065
43	1 791667	93	3 8750 0	43	9861	93	64583	43	498	93	1076
44	1 833333	94	3 916667	44	3 556	94	65 78	44	5 9	94	1088
45	1 875 0	95	3 958333	45	31 50	95	6597	45	521	95	1100
46	1 916667	96	4 000 0	46	31944	96	066667	46	000532	96	001111
47	1 958333	97	4 41667	47	3 639	97	67361	47	544	97	1123
48	00 0	98	4 083333	48	33333	98	68056	48	556	98	1134
49	4 667	99	4 1 5 0	49	34 28	99	6875	49	567	99	1146
50	83333	100	4 166667	50	0347	100	069444	50	000579	100	001157



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